BULLETIN OF MISCELLANEOUS INFORMATION No. 8 1933
ROYAL BOTANIC GARDENS, KEW

XLVI—DR. OTTO STAPF, F.R.S.

In our last number we recorded with deep regret the death on August 4th of Dr. Otto Stapf, while on a well-earned holiday in Austria. Dr. Stapf had been at great pains to complete his work on the October issue of the Botanical Magazine before his holiday and it was noticed that he appeared a little tired when he left Kew. On reaching Austria he became somewhat unwell, and the sad news of his death came as a great shock to all his friends. After his forty-two years close connection with Kew, the death of so respected and valued a colleague is a very severe loss not only to his many friends but to botanists throughout the world.

Otto Stapf was the son of Joseph Stapf, and was born on March 23rd, 1857, at Ischl, Austria, where his father was Oberbergrat. His father soon after took charge of the salt springs at Hallstadt, and here he spent his boyhood. He commenced his botanical studies under Professor Wiesner at Vienna and was awarded the degree of Ph.D. at the end of his University course. He then became Assistant to Professor Kerner von Marilaun in 1882, and a Privat Docent in 1887. In 1885 he travelled in Persia and made a notable collection of plants; and during the years 1885–1889 he published a series of papers mainly dealing with the flora and vegetation of the Orient, and particularly of Persia. The most important of these were the account of the botanical results of the Polak expedition to Persia in 1882, and revision of the genus *Ephedra*.

It appears that he was not wholly satisfied with his position in Vienna after his return from his Persian expedition and early in 1890, when sending Sir Joseph Hooker a copy of his *Ephedra* monograph, he explained his reasons for wishing to leave Vienna. Later in that year he was offered the post of Assistant for India at Kew by Sir William Thiselton-Dyer, the post which had been vacated by W. B. Hemsley. Fortunately for Kew and for the study of Systematic Botany in this country, Stapf accepted this offer and arrived in England in November 1890, making a tour of European botanic gardens on his way. He commenced his work as Assistant for India at Kew in January 1891.

During his early years Stapf paid special attention to the Asiatic *Melastomaceae* and his paper on the *Sonerileae* of Asia was published in the Annals of Botany.

The large collection of plants made by Dr. G. D. Haviland on Mount Kinabalu in North-eastern Borneo was placed in Dr. Stapf's

hands for identification on its receipt in 1892, and the results of his work on the collection were incorporated in a comprehensive account of the flora of Mount Kinabalu which he contributed to the Linnean Society.

On the completion of this work in 1894, Stapf assisted Sir Joseph Hooker in his elaboration of the *Gramineae* for the Flora of British India and devoted much of his time to the work. Hooker (Life & Letters, **2,** 186), writing to the late Mr. J. F. Duthie on May 20, 1895, said : " Stapf has worked up the Indian *Poas*, and after carefully revising his work, I do not think it could be better done." In a letter to Mr. Duthie, dated June 26, 1896 (Life & Letters, **2,** 287), Hooker wrote : " I have put *Poa, Festuca* and *Bromus* into Stapf's hands, as he is well up in the S. European and Persian species. In respect of *Poa* his work agrees well with Hackel's determinations of your plants, but as to *Festuca* they are wide apart. After two struggles with the latter genus I gave it up, and I shall be curious to know what future observers make of Stapf's determinations. I can certify to the extreme care with which he has worked, but my impression is that the whole of *ovina* and *rubra* and *duriuscula* groups are utterly unmanageable." In the Flora of British India, Stapf's name appears as the author of the work on the genera *Catabrosa, Eragrostis, Poa, Festuca* and *Bromus*. His revision of the genus *Eragrostis* deserves special mention, on account of the peculiar difficulties involved in classifying its numerous and often closely-allied species.

Turning now to his more intimate connection with Kew, after his appointment in 1899 as Principal Assistant in the Herbarium, it was quickly felt how excellent a preparation his earlier career had been for the systematic studies which were to occupy the greater part of his life. His travels in Persia and his experience of teaching at Vienna gave him a breadth of view sometimes lacking in the specialist. Then, too, his knowledge of European languages was of great value to him and to Kew, for there were few languages with which he was entirely unacquainted, and his ability to write to, and converse with, Continental botanists in their own tongue greatly added to the intercourse between Kew and botanical institutions on the Continent.

Those who had the good fortune to work under Stapf's guidance in the Kew Herbarium owe a great deal to the kindly interest which he took in the progress of the junior members of the staff, and to the example of thoroughness in systematic research set by him.

Wherever possible, Stapf verified his determinations by careful comparison with types of authenticated material, and in the absence of this by comparison with descriptions. He utilized to the full the unrivalled facilities afforded by the Library, and acquired a very extensive bibliographical knowledge, which stood him in good stead subsequently as Honorary Editor of the " Index Londinensis." Though he never engaged in bibliographical research as such, many

notes in the botanical volumes at Kew testify to his care in ascertaining the dates of publication of particular works or parts. Notes and sketches of dissections on the herbarium sheets also bear witness to his unremitting industry. A very large number of detailed drawings of the spikelets of grasses are scattered throughout most of the genera in the Herbarium. These are of great value in determining specimens and show him to have been a draughtsman much above the average. While most of his published work was concerned purely with systematic botany, his interests were far wider. He had a considerable knowledge of ancient botany and particularly of Dioscorides, a subject in which his acquaintance with the Oriental flora was of great value. Unfortunately, however, his notes on the determination of the plants of Dioscorides were not completed, and remain unpublished. As an aid to floristic and phytogeographical studies he supervised the compilation by Mrs. Stapf of a card-catalogue of maps published during the last fifty years, and placed this at the disposal of his colleagues.

Stapf was always interested in the geographical distribution of plants, his principal contribution to that branch of study being an account of the Southern Element in the British Flora.

His sound morphological and anatomical knowledge is shown in his papers on the structure of the female flower and fruit of *Sararanga sinuosa*, the fruit of *Melocanna bambusoides* and the Aconites of India (1905), and in the account of the families *Pedaliaceae* and *Martyniaceae* published in Engler and Prantl's Pflanzenfamilien.

His contributions to Nomenclature were few but practical, consisting of statements of the cases for the retention of certain well-known names of grasses rejected by other authors. The two most important are papers on "*Setaria* or *Chaetochloa*" (1920) and "The Nomenclature of *Bromus*" (1928).

Stapf's botanical career may conveniently be divided into five sections.

(1) 1882–1889. Academic work, travels in Persia, study of the Oriental flora.

(2) 1890–1898 (as Assistant for India), to which reference has already been made.

(3) 1899–1908 (as Principal Assistant). Work on the "Flora of Tropical Africa" and "Flora Capensis" including the accounts of the families *Apocynaceae*, *Orobanchaceae*, *Lentibulariaceae* and *Pedaliaceae*. An enumeration of the known plants of Liberia was published in Sir Harry Johnston's "Liberia" (1906). To this period also belong Stapf's monographs on "The Aconites of India" (1905) and the "Oilgrasses of India and Ceylon" (1906), the completion of the *Gramineae* for the "Flora Capensis," an enumeration of the grasses of British Somaliland (1907), and a general account of the grass-flora of South Africa. Although more than thirty years have passed since the publication of the *Gramineae* in the "Flora Capensis," it is still the

standard work on South African grasses. His paper on the fruit of *Melocanna bambusoides*, mentioned above, also appeared during this period, which was perhaps the most brilliant part of his career, and his election as F.R.S. in 1908 marked the recognition by the scientific world of his high attainments and great services to botany.

(4) 1909–1921 (as Keeper of the Herbarium). After becoming Keeper of the Herbarium, Stapf had naturally less time for original investigation, and on the other hand a still wider sphere of interest. The *Myristicaceae* and *Lauraceae* of the " Flora of Tropical Africa " appeared in 1909.

The determination of critical plants cultivated in the Gardens resulted in papers on species of *Epacris* (1910), *Osmanthus* (1911), *Crataegus* (1914), *Phelipaea* (1915) and *Gunnera* (1919).

Stapf continued to work on the *Gramineae* throughout his Keepership, naming all the grasses in the new collections received during that period, and gradually getting the material already in the Herbarium into good order. Thanks to his work on the *Gramineae*, very many valuable collections have been received at Kew for determination and incorporation in the Herbarium. He published an enumeration of the grasses of Siam (1912), isolated descriptions of new genera and species of grasses from Africa, Australia, etc., and a series of papers on economic grasses including Manchurian Waterrice (1908), Blue Couch (1911), Elephant Grass (1912), Rice Grass (1914), Iburu and Fundi (1915), Kikuyu Grass (1921) and Efwatakala Grass (1922). Stapf was the first to suggest the hybrid origin of *Spartina Townsendii*, a suggestion which was later confirmed cytologically by Huskins. During the years 1917–1920 four parts of the *Gramineae* of " Flora of Tropical Africa " appeared including the *Andropogoneae* and about half of the *Paniceae*. Stapf's grouping of the genera of the *Andropogoneae* (a most difficult tribe), in the " Flora of Tropical Africa " is original and essentially practical, while the classification of cultivated Sorghums in the same work is of great value both to botanists and agriculturists. An entire part (25 plates) of Hooker's " Icones Plantarum " was devoted to new genera and species of grasses, mostly from tropical Africa.

(5) 1922–1933 (Retirement). With other men retirement means usually a slackening of output, but with Stapf it meant merely a change of work. Partly for financial reasons—he had only twenty-three years as a Civil Servant and his pension was proportionately small—but mainly from the love of his subject, Stapf continued to labour as actively as before. He was Editor of the " Botanical Magazine " from 1922 until his death, and under the auspices of the Royal Horticultural Society raised the scientific standard of the Magazine to a pitch which it had never before attained. The preparation of the plates was supervised with scrupulous care and the letterpress contained all that could be said of the subject. The appreciation of the horticultural world was marked by the award in 1927 of the V.M.H. by the

Royal Horticultural Society. An account of " The Botanical Magazine: its history and mission" was given by Stapf in Journ. R. Hort. Soc. **51**, 29 (1926).

As Honorary Editor of the " Index Londinensis " for the Royal Horticultural Society Stapf performed another great service for botany and horticulture. This monumental work in six volumes includes references to all plates and figures of Flowering Plants and Ferns published from 1753 to 1920 inclusive. It was planned by Stapf and carried out at Kew under his constant supervision. The cross-references which add so greatly to its usefulness could have been supplied only by a botanist of wide experience. The value of the Index is being increasingly realized by both botanists and horticulturists. Before its appearance it sometimes meant a long search to find a figure of a particular plant. Now, by the chronological arrangement adopted, it is easy not only to find the best figures of a species, but also to trace its botanical and horticultural history from the time of Linnaeus onwards. Stapf's great services to Horticulture in bringing out the " Index Londinensis " were recognized on its completion by the award of a Veitch Memorial Gold Medal by the Royal Horticultural Society (*K.B.* 1932, 44).

The " Botanical Magazine " and " Index Londinensis " left him little time for other research, and his work on tropical African grasses came to a standstill for some years. A fifth part of the *Gramineae* of the " Flora of Tropical Africa," written in collaboration with Mr. C. E. Hubbard, appeared, however, in 1930, and a sixth is now in the press. The account of the *Podocarpaceae* and *Cupressaceae* in " Flora Capensis," **5,** sect. 2, Supplement, appeared in 1933.

Stapf was intimately connected with the Linnean Society for many years. In 1898 he was awarded the honour of A.L.S., becoming F.L.S. in 1902. He was elected to the Council in 1904 and served as Botanical Secretary from 1908 to 1916, taking an active part in botanical discussions. In 1927 he was awarded the Linnean medal in recognition of his services to science (Proc. Linn. Soc. 1926–27, 53). His continental distinctions included the Corresponding Membership of the Vienna Academy of Sciences and of the German Horticultural Society, and the Honorary Membership of the German Botanical Society.

In paying this tribute to Stapf's devoted service to the Science of Botany and to this country, which he had made his home, reference must be made to the great difficulty in which he was placed at the time of the war. His feelings must often have been strained to the utmost with relatives and friends ranking as enemies of this country, but, though he had to bear unkind remarks from time to time from busybodies in the neighbourhood and often felt sad and depressed, Stapf stood by the country of his adoption and never failed in his untiring and loyal service to Great Britain.

Although undoubtedly Stapf's main interests were scientific he was also very fond of literature and art in its broadest sense. This wide outlook on life helped him to enjoy to the full his travels, whether in England or abroad. It was a real pleasure and education to go on a botanical ramble with him.

To those who did not know Stapf very well, he would appear to possess a somewhat autocratic manner, but under that rather austere exterior was the kindliest of men and one of the most modest. He had wonderful patience and, as those who worked with him can testify, never spared himself in helping others. In the death of Stapf, science has lost a great man, and those who were privileged to know him well, a staunch and understanding friend.

Select List of Works in Chronological Sequence.

Die botanischen Ergebnisse der Polak'schen Expedition nach Persien in Jahre 1882. *Denkschr. Akad. Wien,* **50,** 1–72 (1885) ; 271–346 (1886).

Beiträge zur Flora von Lycien, Carien und Mesopotamien. *Denkschr. Akad. Wien,* **50,** 73–120 (1885) ; **51,** 347–384 (1886).

Vegetationsbilder aus dem südlichen und mittleren Persien. *Bot. Centralbl.* **27,** 211–214, 243–245, 275–278 (1886).

Die Pflanzenreste der Hallstätter Heidengebirges. *Verh. Zool.-Bot. Ges. Wien,* **36,** 407–418 (1886).

Ueber einige Iris-Arten des Botanischen Gartens in Wien. *Oesterr. Bot. Zeitschr.* **37,** 373–377, 415–419 (1887) ; **38,** 12–15 (1888).

Ueber die Stachelpflanzen der iranischen Steppen. *Sitzb. Zool.-Bot. Ges. Wien,* **37,** 35–39 (1887).

Beiträge zur Flora von Persien. *Verh. Zool.-Bot. Ges. Wien,* **38,** 549–552 (1888) ; **39,** 205–212 (1889).

Die Arten der Gattung Ephedra. *Denkschr. Akad. Wien,* **56,** 1–112, tt. 1–5 (1889).

Ueber den Champignonschimmel als Vernichter von Champignonculturen. *Verh.-Zool.-Bot. Ges. Wien,* **39,** 617–622 (1889).

Die Arten der Gattung Adonis. *Sitzb. Zool.-Bot. Ges. Wien,* **39,** 73–75 (1889).

On the Sonerileae of Asia. *Ann. Bot.* **6,** 291–323, t. 17 (1892).

On the Flora of Mount Kinabalu, in North Borneo. *Trans. Linn. Soc., Bot.* **4,** 69–263, t. 11–20 (1894).

Pedaliaceae. *Engl. u. Prantl, Die natürlichen Pflanzenfamilien,* **4,** pt. 3b, 253–265 (1895).

Martyniaceae. *Ibid.* 265–269.

On the structure of the female flower and fruit of Sararanga sinuosa Hemsl. (Pandanaceae). *Journ. Linn. Soc., Bot.* **32,** 479–489, tt. 4–7 (1896).

Gramineae : Catabrosa, Eragrostis, Poa, Festuca and Bromus. *Hooker, J.D., Fl. Brit. Ind.* **7,** 310–327, 337–346, 348–362 (1896).

The botanical history of the Uva, pampas grass and their allies. *Gard. Chron.* ser. 3, **22,** 358, 378, 396 (1897).

Gramineae. *Dyer, Fl. Cap.* **7,** 310–384 (1898); 385–576 (1899); 577–750, 760–765 (1900).
Dicellandra, Hook. f., and Phaeoneuron, Gilg (Melastomaceae). *Journ. Linn. Soc., Bot.* **34,** 482–495, t. 19 (1900).
Sonerila (with G. King). King, Materials for a Flora of the Malayan Peninsula, **2,** 426–452 (1900).
Apocynaceae. *Dyer, Fl. Trop. Afr.* **4,** sect. 1, 24–231 (1902); 588–614 (1904).
On the nomenclature of the Pampas-grass. *Gard. Chron.* ser. 3, **34,** 399–400 (1903).
On the fruit of Melocanna bambusoides, Trin., an endospermless, viviparous genus of Bambuseae. *Trans. Linn. Soc., Bot.* **6,** 401–425, tt. 45–47 (1904).
Orobanchaceae (with W. P. Hiern). *Dyer, Fl. Cap.* **4,** sect. 2, 421–422 (1904).
Lentibularieae. *Ibid.* 423–437 (1904).
Pedalineae. *Ibid.* 454–463 (1904).
Himalayan Bamboos. *Gard. Chron.* ser 3, **35,** 305–306, 325–326, 340, 356, 409 (1904).
Die Gliederung der Gräserflora von Sudafrika. *Urban u. Graebner, Festchrift Ascherson,* 391–412 (1904).
Xerochloa. *Engl. Bot. Jahrb.* **35,** 64–68 (1904).
The Pampas grasses (Cortaderia, Stapf). *Flora and Sylva,* **3,** 171–175 (1905).
Contributions to the flora of Liberia. *Journ. Linn. Soc., Bot.* **37,** 79–115 (1905).
Graminées nouvelles de la Guinée française récoltées par M. Pobeguin. *Journ. de Bot.* **19,** 98–108 (1905).
The Aconites of India, a monograph. *Ann. Roy. Bot. Gard. Calc.* **10,** 115–197, tt. 92–116 (1905).
On Kickxia and Funtumia. *Kew Bull.* 1905, 45–59 (1906).
The Statices of the Canaries of the subsection Nobiles. *Ann. Bot.* **20,** 205–212, 301–310 (1906).
The Oil-Grasses of India and Ceylon. *Kew Bull.* 1906, 297–363.
Orobanchaceae. *Dyer, Fl. Trop. Afr.* **4,** sect. 2, 462–468 (1906).
Lentibularieae. *Ibid.* 468–499 (1906).
Pedalineae. *Ibid.* 538–570 (1906).
The known plants of Liberia. *Johnston, Liberia,* **2,** 570–669, figs. 246–266 (1906).
Plantae Novae Daweanae in Uganda lectae (with T. A. Sprague and others). *Journ. Linn. Soc., Bot.* **37,** 495–532 (1906).
Apocynaceae. *Dyer, Fl. Cap.* **4,** sect. 1, 490–518 (1907).
The grasses of British Somaliland. *Kew Bull.* 1907, 203–228.
Mgoa rubber in British East Africa (Mascarenhasia elastica, K. Schum.). *Kew Bull.* 1907, 283–285.
A new rubber tree: Palo Amarillo (Euphorbia fulva, Stapf). *Kew Bull.* 1907, 294–296.
Additions to the Florula Marmarica. *Kew Bull.* 1907, 365–369.

The Gums Ammoniac of Morocco and the Cyrenaica. *Kew Bull.* 1907, 375–388.

Hallieracantha, a new genus of Acanthaceae. *Journ. Linn. Soc., Bot.* **38,** 6–17 (1907).

Rediscovery of Statice arborea and discovery of a new allied species. *Ann. Bot.* **22,** 115–116 (1908).

Spartina Townsendii. *Gard. Chron.* ser. 3, **43,** 33–35, figs. 17–20 (1908) ; *Journ. Bot.* **46,** 76–81 (1908).

Gynoecium or Gynaecium. *Gard. Chron.* l.c. 252 (1908).

Some suffrutescent Apocynaceae from Angola. *Journ. Bot.* **46,** 209–212, 395, t. 492 (1908).

Ecanda rubber (Raphionacme utilis, Brown et Stapf). *Kew Bull.* 1908, 209–215, cum tab.

Teo-non, a new rubber tree from Tonkin (Bleekrodea tonkinensis, Dub. et Eberh.). *Kew Bull.* 1908, 262–265.

Polyadoa and Holalafia. *Kew Bull.* 1908, 302–304.

Novitates Florae Africanae : Gramineae. *Bull. Soc. Bot. France,* Mém. **8,** 97–105 (1908).

The South African bamboo (Arundinaria tessellata, Munro). *Kew Bull.* 1909, 59–61.

The herbarium Savatier. *Kew Bull.* 1909, 148–150.

Toowoomba canary grass (Phalaris bulbosa, L.). *Kew Bull.* 1909, 289–292.

Lignum nephriticum. *Kew Bull.* 1909, 293–305.

The Manchurian water-rice (Zizania latifolia, Turcz.). *Kew Bull.* 1909, 385–390.

Myristicaceae. *Dyer, Fl. Trop. Afr.* **6,** sect. 1, 156–167 (1909).

Lauraceae. *Ibid.* 171–188 (1909).

Peglera and Nectaropetalum (with L. A. Boodle). *Kew Bull.* 1909, 188–191.

Gardenia Thunbergia and its allies (with J. Hutchinson). *Journ. Linn. Soc., Bot.* **38,** 417–428, t. 37 (1909).

Diagnoses Plantarum Africae : Gramineae. *Journ. de Bot.* sér 2, **2,** 204–215 (1909).

The History of the Wheats. *Rep. Brit. Ass.* 1909, 799–807 (1910) ; *Journ. Board Agric.* **17,** Suppl. 4, 71–83 (1910).

Epacris heteronema, Labill. and E. dubia, Lindl. *Kew Bull.* 1910, 213–217, cum tab.

Garnotiella. *Kew Bull.* 1910, 301–302.

Osmanthus Aquifolium and O. Fortunei. *Kew Bull.* 1911, 177–181, cum tab.

Blue couch : a new lawn grass (Digitaria didactyla, Willd.). *Kew Bull.* 1911, 256–261.

Laurineae. *Dyer, Fl. Cap.* **5,** sect. 1, 493–502 (1912).

Proteaceae (part). *Dyer, Fl. Cap.* **5,** sect. 1, 502–509, 552–643 (with E. P. Phillips) (1912).

A new ground bean (Kerstingiella geocarpa, Harms). *Kew Bull.* 1912, 209–213, cum tab.

Elephant grass. A new fodder plant. (Pennisetum purpureum, Schum.). *Kew Bull.* 1912, 309–316.
Akaniaceae : a new family of Sapindales. *Kew Bull.* 1912, 378–380.
Contributions to the flora of Siam : Gramineae. *Kew Bull.* 1912, 427–434.
A new banana from the Transvaal (Musa Davyae, Stapf). *Kew Bull.* 1913, 102–104.
The Imperial Botanic Garden of Peter the Great at St. Petersburg. *Kew Bull.* 1913, 243–255, cum 2 tab.
The bicentenary of the Botanic Garden of St. Petersburg. *Nature*, **91,** 451–452 (1913).
The Southern Element in the British Flora. *Engl. Bot. Jahrb.* **50,** Suppl., 509–525 (1914).
Townsend's grass or rice grass, Spartina Townsendii. *Proc. Nat. Sc. Soc. Bournemouth*, **5,** 76–82, tt. 1–3 (1914) ; *Journ. Bot.* **52,** 245–247 (1914).
The Mexican hawthorn (Crataegus pubescens, H. B. K.). *Kew Bull.* 1914, 289–298.
Encephalartos Hildebrandtii. *Kew Bull.* 1914, 388–392.
The genus Phelipaea. *Kew Bull.* 1915, 285–296.
The South African camphor tree. *Kew Bull.* 1915, 297–298.
A new Euphorbia from St. Helena (with A. Thellung). *Kew Bull.* 1916, 200–201.
Iburu and Fundi, two cereals of Upper Guinea (Digitaria Iburua ; D. exilis). *Kew Bull.* 1915, 381–386.
Cycas Thouarsii. *Kew Bull.* 1916, 1–8.
Stipa Neesiana in England. *Kew Bull.* 1916, 206–208.
Enneapogon mollis in Ascension Island. *Kew Bull.* 1917, 217–219.
Gramineae. *Dyer, Fl. Trop. Afr.* **9,** 1–192 (1917) ; 193–384 (Jan. 1919) ; 385–576 (June 1919) ; 577–768 (1920) ; 769–944 (with C. E. Hubbard) (1930) ; 945–1100 (in the press).
Gunnera manicata and G. brasiliensis. *Kew Bull.* 1919, 376–378.
Thellungia, a new genus of Gramineae. *Kew Bull.* 1920, 96–99.
Setaria or Chaetochloa ? *Kew Bull.* 1920, 124–127.
The botanical history of the " Sindian " and the age of Abraham's Oak. *Kew Bull.* 1920, 258–264.
Kikuyu grass (Panicum clandestinum, Chiov.). *Kew Bull.* 1921, 85–93.
Daturicarpa, a new genus of Apocynaceae. *Kew Bull.* 1921, 166–171, figs. 1–2.
Efwatakala grass (Melinis minutiflora, Beauv.). *Kew Bull.* 1922, 307–310 (historical account).
Notes on African grasses (with C. E. Hubbard). *Kew Bull.* 1926, 366–368, 440–446 ; 1927, 72–74, 264–272 ; 1929, 263–265 ; 1933, 269–302.
Matluang of Chili (Ephedra sinica Stapf). *Kew Bull.* 1927, 133–134.
Setaria glauca and S. lutescens. *Kew Bull.* 1928, 147–149.

The Nomenclature of Bromus. *Kew Bull.* 1928, 209–211.
Podocarpaceae and Cupressaceae. *Hill, Fl. Cap.* **5,** sect. 2, Suppl. 3–24, figs. 1–2 (1933).
Curtis's Botanical Magazine (Editor and main Author). Volumes **148–156,** tt. 8934–9332 (1922–1933).
Iconum Botanicarum Index Londinensis (Editor). Vol. **1,** 1–547 (1929) ; **2,** 1–548 (1930) ; **3,** 1–555 (1930) ; **4,** 1–568 (1930) ; **5,** 1–549 (1931) ; **6,** 1–570 (1931).

XLVII—THE DATES OF PUBLICATION OF ROYLE'S ILLUSTRATIONS. T. A. Sprague.

Royle's Illustrations of the Botany of the Himalayan Mountains consists of one volume of text, and a second of plates, each bearing the date 1839 on the title page. The work was, however, issued in eleven parts at 20s. each, from 1833 to 1840, the dates of publication being given on p. lxxx (unnumbered) of the Introduction, facing p. 1. Each of the first ten numbers included 32, 40 or 48 pages of text of the " Illustrations " and ten plates, while the eleventh or supplementary number contained 88 pages of text, in addition to pp. xxi–lxxx of the Introduction, the Table of Contents and Indexes, and two plates. An additional complication in determining the dates of botanical names published in Royle's " Illustrations " is the fact that the plates were not in all cases issued along with the corresponding letterpress. Thus—to anticipate for a moment—the plate of *Delphinium cashmerianum* Royle (t. 12) was published in part I (Sept. 1833), whereas the corresponding description did not appear till part II (March 1834). As the plate contains analyses, the valid publication of this name dates from 1833, not from 1834 as would appear from the list given on p. lxxx. Similarly the plate of *Saxifraga spinulosa* Royle (t. 50, fig. 2) appeared before the corresponding text, as is evident from Royle's remarks on p. 227.

The most satisfactory way of determining the details of issue of a work of this kind is of course to examine a copy still in the original wrappers. No such copy of Royle's book being known, recourse must be had to reviews and notices in contemporary journals, and to advertisements of the " Illustrations " on the wrappers of other works. Information has been obtained from the following sources : Loudon's Gardener's Magazine vols. **9–16** (1833–1840) ; Journal of the Asiatic Society, vol. **3** (1834) ; Journal of Literature and Science, Madras, vol. **1** (1834) ; Edinburgh New Philosophical Journal, vols. **16–17** (1834) ; Flora vol. **17,** pt. 1 (1834) ; Magazine of Natural History, vols. **7** (1834) and **8** (1835) ; Jahrbücher für wissenschaftliche Kritik, Berlin, 1838, vol. **2** ; and the wrappers of Curtis's Botanical Magazine from April 1, 1834 to June 1, 1840.

The following dates of publication were supplied in Royle's " Illustrations," p. lxxx :—

No. 1, pp. 1–40, Sept. 1833.
No. 2, pp. 41–72, March 1834.
No. 3, pp. 73–104, June 1834.
No. 4, pp. 105–136, Sept. 1834.
No. 5, pp. 137–176, Jan. 1835.
No. 6, pp. 177–216, April 1835.
No. 7, pp. 217–248, August 1835.
No. 8, pp. 249–288, Dec. 1835.
No. 9, pp. 289–336, May 1836.
No. 10, pp. 337–384, Feb. 1839.
Suppl. No., pp. 385–472, Introduction pp. xxi–lxxviii, Table of Contents, and Indexes, 1840.

The contents and dates of the individual numbers may now be considered.

Part I.—Although this is listed as having appeared in September 1833, it is definitely stated in Loudon's Gardener's Magazine, **9,** 691 (Dec. 1833) that it "was published in the middle of October." According to Flora, **17,** pt. 1, 119 (1834), Robert Brown, at a scientific meeting held at Breslau on Sept. 21, 1833, distributed copies of the prospectus of Royle's "Illustrations," and exhibited specimens of the work, both text and plates. From the account given, it is not certain whether these specimens ("Proben") were proofs or actual copies of No. 1. Although there is some reason to doubt the accuracy of the date "September 1833" given in Royle's book, it must be accepted in the absence of proof to the contrary (International Rules, ed. 2, art. 39). The reviewer in Loudon's Gardener's Magazine may have given the date of receipt of a review copy as the date of publication.

According to Loudon's Gardener's Magazine (l.c.), part I included the following ten plates: 4, *Lagomys alpinus* (the Alpine Hare); 11, *Anemone discolor, Ranunculus polypetalus, Isopyrum grandiflorum, I. microphyllum*; 12, *Delphinium cashmerianum*; 13, *Aconitum heterophyllum*; 14, *Cimicifuga frigida*; 15, *Meconopsis aculeata*; 16, *Corydalis cashmeriana, C. Govaniana*; 17, *Tauscheria desertorum*; 18, *Viola serpens, V. reniformis, V. kunawarensis*; 22, *Grewia elastica*. The same list of plants is given in Journ. As. Soc. **3,** 143 (March 1834). The text corresponding to plates 11–17 appeared in part II, and that of plates 18 and 22 in part III.

Part II.—The notice of this part in Loud. Gard. Mag. **10,** 149 (April 1834) is characterized by several inaccuracies. The reviewer states that "it supplies descriptions of plants figured in the eighteen [sic] plates published in the first part, and contains eleven [sic] additional plates. Of these one [plate 1] is devoted to an exhibition of sections of the geology of the parts of the country spoken of, and the ten [sic] plates bear pictures of plants to which the following names are applied:—[19] *Polygala Myrsinites, furcata, crotalarioides, triphylla*; [20] *Silene Falconeriana*; *Lychnis fimbriata*; [21] *Leucostemma latifolia, angustifolia*; *Arenaria festucoides*; [23] *Gossypium*

herbaceum, arboreum ; [24] *Eurya acuminata* ; *Hypericum japonicum* ; [25] *Cedrela serrata* ; [26] *Cissus rosea, capreolata* ; [27] *Geranium Lindleyanum* ; [28] *Impatiens bicolor, glandulifera.*" Part I included ten plates, not eighteen ; part II also included ten plates, as is stated in the advertisement of Royle's " Illustrations " on the wrapper of Curtis's Botanical Magazine for April 1, 1834. Indeed, the plants mentioned by the reviewer himself occupy only nine, not ten plates. The notice of part II in the Edinburgh New Philosophical Journal, **17,** 204 (1834) mentions that it contained *nine* coloured plates of new plants and a geological section of the Himalayan mountains. According to Journ. Lit. Sc. Madras, **1,** 328 (1834), parts I–II included 18 plates containing 34 plants : this agrees with the details given above. Not all the plants figured in part I were described in part II : the letterpress corresponding to plates 18 and 22 appeared in part III, as mentioned above.

Part II contained also the first eight pages (pp. v–xii) of the Introduction : the review in Journ. As. Soc. **3,** 530 (Oct. 1834) mentions that the introductory remarks break off at the twelfth page ; and according to Jahrb. Wiss. Krit., Berlin, 1838, **2,** 401, pp. i–xx appeared in parts II–III.

Part III.—Information as to the plates included in this part is less precise. According to Loudon, Gard. Mag. **10,** 392 (Aug. 1834), it contained pp. xiii–xx of the Introduction, pp. 73–104 of the text, with one plate of fossil plants, one of animals, and eight of living plants. The plants are unfortunately not specified. It may, however, be assumed that they were the next eight plates in consecutive order, namely nos. 29–36 inclusive. These illustrate 14 species of plants, and the review in Journ. As. Soc. **3,** 535 (Oct. 1834) states that part III " contains plates of fourteen new plants ; two zoological ; and one plate of the fossil plants of the Burdwan coal formation." It is true that not all the 14 plants were new species, but the reviewer might easily have been unaware of this. According to Mag. Nat. Hist. **7,** 480 (1834), the zoological plate was no. 5 (*Cervus* spp.). The plates concerned may accordingly be identified as : no. 2 (Fossil Plants) ; 5 (*Cervus dodur* and *C. rutwa*) ; 29, *Dictamnus himalayanus* ; 30, *Biebersteinia odora* ; 31, *Euonymus echinata, Odina wodier* ; 32, *Thermopsis barbata, Edwardsia mollis* ; 33, *Uraria lagopoides, Astragalus leucocephalus* ; 34, *Caragana Gerardiana, Genista versicolor* ; 35, *Parochetus communis, Smithia ciliata* ; 36, *Aquilaria Agallocha, Astragalus Grahamianus.*

Part IV.—The data with regard to this part are also less definite. According to Loud. Gard. Mag. **11,** 86 (Febr. 1835), it included nine coloured plates of plants. Assuming these to have been the next nine in consecutive order, they were : 37, *Cassia lanceolata* ; 38, *Prinsepia utilis, Cerasus cornuta* ; 39, *Sieversia elata, Dalibarda calycina* ; 40, *Potentilla Cautleyana, P. pteropoda, Sibbaldia purpurea* ; 41, *Potentilla Saundersiana, P. microphylla, P. Inglisii* ; 42, *Rosa sericea, R. Webbiana* ; 43, *Circaea cordata, Epilobium laxum* ; 44,

Lythrum cashmerianum, Myricaria bracteata ; 45, *Conocarpus latifolia, Sonerila tenera*—19 plants in all : this figure agrees with the statement in Mag. Nat. Hist. **7,** 608 (1834). The tenth plate was apparently the Plan of the Botanic Garden, Saharunpore (frontispiece to vol. **2**). It should be mentioned that Meisner (Gen. **2,** 72) cited *Prinsepia* Royle from part III of Royle's "Illustrations." This I believe to be a mistake. It is known that numbers on the wrappers of parts were sometimes written, not printed (as in the case of parts 4 and 6 of Seemann's Botany of the Herald), and if this was the case with Royle's book there was a double possibility of error. Meisner was not always correct in his citations from Royle's "Illustrations." Thus he cited the subgeneric name *Amphicome* erroneously as published in 1835, instead of 1836, and *Cyananthus* from p. 304 instead of p. 309. The description of *Leucostemma* appeared in part III of Royle's "Illustrations," as stated by Meisner, but the figure (t. 21, fig. 1, 2) was issued in part II. Both description and figure of *Murdannia* are cited by Meisner from 1839, whereas the description (p. 403) did not appear till 1840. In view of these inaccuracies, no reliance can be placed on Meisner's citations from Royle.

Part V.—According to Loud. Gard. Mag. **11,** 199 (April 1835), this included nine plates of plants, and one plate [no. 3] of fossil bones, teeth and shells. The plates of plants, if issued in consecutive numerical order, were :—46, *Philadelphus tomentosus, Deutzia corymbosa* ; 47, *Cucumis pubescens, C. pseudo-Colocynthis, C. Hardwickii* ; 48, *Sedum linearifolium, S. azureum, S. coccineum* ; 49, *Saxifraga imbricata, S. ciliata, S. ramulosa* ; 50, *Saxifraga stenophylla, S. spinulosa, Parnassia nubicola* ; 51, *Pycnocycla glauca, Eriocycla nuda* ; 52, *Osmorrhiza laxa, Hymenolaena Govaniana* ; 53, *Kohautia coccinea, Lonicera bracteata* ; 54, *Nardostachys jatamansi*. We have evidence that t. 51 appeared in part V : Decaisne cited *Pycnocycla* Royle from fasc. V. t. 51 (Ann. Sc. Nat. sér. 2, **3,** 257).

Part VI.—The review of this part in Loud. Gard. Mag. **12,** 142 (March 1836) states that it contained a view of the Himalayan Mountains [frontispiece], a plate of birds [no. 7, according to Mag. Nat. Hist. **8,** 415 : 1835], and eight plates of plants. Assuming that the latter were issued in numerical sequence, they were as follows :—55, *Morina Wallichiana, Scabiosa speciosa* ; 56, *Echinops nivea, Cyathidium taraxacifolium* ; 57, *Dolomiaea macrocephala* ; 58, *Aster angustifolius, Calimeris flexuosa, Galatella juncea* ; 59, *Aplotaxis gnaphaloides, Chaptalia gossypina* ; 60, *Corvisartia indica, Ligularia arnicoides* ; 61, *Mulgedium macrorhizum, M. sagittatum* ; 62, *Campanula cashmeriana, Codonopsis rotundifolia*.

Part VII.—This contained two non-botanical plates, namely, nos. 8 and 9 (Mag. Nat. Hist. **8,** 584 : 1835). The eight botanical plates were presumably :—63, *Andromeda fastigiata, Gaultheria nummularioides, G. trichophylla* ; 64, *Rhododendron lepidotum, Rh. anthopogon* ; 65, *Olea ferruginea, Syringa Emodi* ; 66, *Orthanthera*

viminea, Holostemma Brunoniana, Ceropegia Wallichii ; 67, *Swertia caerulea, S. alternifolia* ; 68, *Gentiana coronata, G. kurroo, G. contorta* ; 69, *Cyananthus lobatus, C. integer, Codonopsis ovata* ; 70, *Didymocarpus macrophylla, Chirita bifolia.*

Part VIII.—This seems to have contained ten botanical plates :—71, *Platystemma violoides, Picrorhiza kurrooa* ; 72, *Incarvillea diffusa, Pedicularis versicolor* ; 73, *Anchusa moltkioides, Lantana dubia, Gymnandra cashmeriana* ; 74, *Eremostachys superba* ; 75, *Phlomis cashmeriana, Salvia hians* ; 76, *Primula rosea, P. elliptica* ; 77, *Primula obtusifolia, P. purpurea* ; 78, *Rheum spiciforme* ; 79 (63a), *Thibaudia variegata, Gaylussacia serrata* ; 80, *Begonia echinata, Polygonum vaccinifolium, P. Brunonis.*—Plate 79 containing *Thibaudia* and *Gaylussacia* is numbered " 63a or 79 " the lower number indicating its correct position in taxonomic sequence after *Andromeda* and *Gaultheria* (t. 63).

Part IX.—Here we return to firmer ground. According to Loud. Gard. Mag. **12,** 319 (June 1836) the plates included *Elaeagnus parvifolia,* four species of *Euphorbia, Pinus khutrow, Quercus dealbata* [sic], *Pinus longifolia* and *P. Gerardiana, Abies pindrow, Crocus sativus* var. *cashmerianus.* As *Elaeagnus* is no. 81 and *Crocus* is no. 90, it may be assumed that the ten plates were as follows :—81, *Elaeagnus parvifolia, Daphne mucronata* ; 82, *Euphorbia pentagona, E. humilis, E. nana, E. cashmeriana* ; 83, *Procris racemosa, P. peduncularis, P. obtusa* ; 84, *Pinus khutrow, Quercus dealbata** ; 85, *Pinus longifolia, P. Gerardiana* ; 86, *Abies pindrow* ; 87, *Aceras angustifolia, Peristylus goodyeroides, Herminium gramineum* ; 88, *Cyrtopera flava, Dendrobium alpestre* ; 89, *Roscoea alpina, R. lutea, R. purpurea* ; 90, *Crocus sativus* var. *cashmerianus, Iris nepalensis.*

Part X.—The plates issued with this part were apparently the following :—10 (Lepidoptera, etc.) ; 91, *Burmannia coelestis, Iris longifolia, Hypoxis minor* ; 92, *Lilium Thomsonianum, Fritillaria verticillata* ; 93, *Trillium Govanianum, Lloydia himalensis, Ll. kunawurensis* ; 94, *Smilax maculata, S. Villandia* ; 95, *Butomus lanceolatus, Gagea elegans, Murdannia scapiflora* ; 96, *Ophiopogon intermedius, Uvularia Leschenaultiana* ; 98 (84a), *Populus ciliata, Falconeria insignis, F. Wallichii* ; 99 (78a), *Rheum Webbianum, Balanophora dioica* ; 100 (83a), *Putranjiva Roxburghii.* Plates 6 and 97 appeared in part XI.

Part XI.—According to Loud. Gard. Mag. **16,** 348 (July 1840), this contained the title pages of vols. **1** and **2,** the dedications, preface, table of contents, synoptic table of contents, the completion of the introduction [pp. xxi–lxxviii] including the geology, meteorology and entomology, descriptions of insects, accounts of mammals and birds, indexes, list of plates, and list of 197 plants figured. The plates were no. 6, Fossils of the Sub-Himalayan or Sewalik Hills, and no. 97, *Eriocaulon Sollyanum, Hordeum Aegiceras, Andropogon Calamus-*

*An error for *Q. dilatata,* corrected in copies issued subsequently—see p. 389.

aromaticus. Presumably the leaf (pp. lxxix-lxxx, unnumbered) of " corrigenda et addenda," and dates of publication of the several numbers, was also issued with this part.

Contents of Parts and Dates of Publication.

Part I (Sept. 1833) : Pages 1–40, Plates 4, 11–18, 22.

Part II (March 1834) : Pages v–xii, 41–72, Plates 1, 19–21, 23–28.

Part III (June 1834) : Pages xiii–xx, 73–104, Plates 2, 5, 29–36.

Part IV (Sept. 1834) : Pages 105–136, Plates 37–45, and Plan of Botanic Garden, Saharunpore (Frontispiece of vol. **2**).

Part V (Jan. 1835) : Pages 137–176, Plates 3, 46–54.

Part VI (April 1835) : Pages 177–216, Plates 7, 55–62, and View of the Himalaya Mountains (Frontispiece of vol. **1**).

Part VII (Aug. 1835) : Pages 217–248, Plates 8, 9, 63–70.

Part VIII (Dec. 1835) : Pages 249–288, Plates 71–80.

Part IX (May 1836) ; Pages 289–336, Plates 81–90.

Part X (Febr. 1839) : Pages 337–384, Plates 10, 91–96, 98–100.

Part XI (1840, prior to July). Pages xxi–lxxx, 385–472, Plates 6, 97, Title pages, Dedications, Preface, Tables of contents, List of plates, Alphabetical list of plants figured.

Dates of New Species figured by Royle.

The dates of the unfigured new species may be ascertained from the foregoing summary. The dates of those figured in Royle are given below. They fall into two categories : (1) those with figures accompanied by analyses, which date from the publication of the plate, where this is earlier than the corresponding text ; (2) those without analyses, which date from the publication of the description (if any) in the text.

The question of what constitutes an " analysis " under Art. 37 of the International Rules may be briefly considered. The underlying consideration was doubtless to exclude illustrations which did not show details required for determination. Hence mere general pictures of a species were excluded. Such details may be shown by supplying figures of either (1) dissected or detached parts, whether natural size or magnified, or (2) enlarged parts, such as an entire flower. An excellent example of the latter is found in Jacq. Ic. Pl. Rar. t. 203, which includes figures of two highly magnified but undissected flowers. These show all the points required for specific determination, although the parts of the flower are not drawn separately.

New combinations which appeared for the first time on the plates are also included here for convenience sake, although their valid publication dates from the issue of the corresponding text, in which the synonyms on which they were based were cited.

Abies pindrow Royle, t. 86, fig. a–i (May 1836).—In his general remarks on p. 351 (Febr. 1839) Royle adopted the name *Abies*

pindrow, but on p. 354, the description supplied by D. Don is headed *Pinus* v. *Picea pindrow* (vide *Kew Bull.* 1933, 414).

Aconitum heterophyllum Wall. ex Royle, t. 13, fig. 1–4 (Sept. 1833).

Anchusa moltkioides Royle, t. 73, fig. 1, a–h (Dec. 1835).

Andropogon Calamus-aromaticus Royle, Essay Antiq. Hindoo Med. 34, 82 (1838), nomen; Royle, Illustr. 425, t. 97, fig. 3, a–c (1840). Figure 3c is an "analysis," being an enlarged raceme, showing details not visible in the general figure.—*A. Calamus-aromaticus* Royle is now reduced to *Cymbopogon Martini* (Roxb.) Stapf.

Anemone discolor Royle, p. 52 (March 1834).—There is no analysis accompanying the figure (t. 11, fig. 1): the representation of the back of a detached flower cannot be regarded as such.

Aplotaxis gnaphaloides DC. ex Royle t. 59, fig. 1 (April 1835).—There are no analyses, and no description in the text (p. 251). The valid publication of the name dates from DC. in DC. Prodr. **6,** 542 (1837), as *A. gnaphalodes.*

Arenaria festucoides Royle, p. 81 (June 1834).—The figure (t. 21, fig. 3) lacks dissections.

Aster angustifolius Lindl. t. 58, fig. 1 (April 1835).—The figure is without analyses, and there is no description in the text (p. 251). Reduced to *A. altaicus* Willd. in Fl. Brit. Ind. In any case the name cannot be used since it is a later homonym of *A. angustifolius* Jacq. (1798).

Astragalus Grahamianus Royle, t. 36, fig. 2, a–f* (June 1834).

Astragalus leucocephalus Graham ex Benth., t. 32, fig. 2, a–f (June 1834).

Balanophora dioica R. Br. ex Royle, t. 99 (78a), fig. 2, cum anal. (Febr. 1839).—There is no description of the species in the text, p. 136 (May 1836). A description was first supplied by J. D. Hooker in Trans. Linn. Soc. **22,** 45 (1856), but the name dates, for purposes of priority, from 1839.

Begonia echinata Wall. ex Royle, t. 80, fig. 1, a–g (Dec. 1835).

Calimeris (sphalm. *Calameris*) *flexuosa* Royle, t. 58, fig. 2, a (April 1835).—Antedates the citation from DC. Prodr. **5,** 258 (1836), given in Index Kewensis.

Campanula cashmeriana Royle, t. 62, fig. 1, a (April 1835).

Caragana Gerardiana Royle, t. 34, fig. 1, a–g (June 1834).

Cedrela serrata Royle, t. 25, fig. a–f (March 1834).

Cerasus cornuta Wall. ex Royle, t. 38, fig. 2, a–f (Sept. 1834).

Chaptalia gossypina Royle, t. 59, fig. 2, a–d (April 1835).

Cimicifuga frigida Royle, t. 14, fig. a–i (Sept. 1833).

Circaea cordata Royle, t. 43, fig. 1, a–i (Sept. 1834).

Cissus capreolata Royle, t. 26, figs. 2, a, b, 2* (March 1834).—Reduced by Planchon in DC. Monogr. **5,** pt. 2, 433, to *Tetrastigma serrulatum* (Roxb.) Planch.

Cissus rosea Royle, t. 26, fig. 1, a–d, c–f (March 1834).—In the text (p. 149: 1835), Royle used the name *Vitis rosea* Royle.

Codonopsis ovata Royle, t. 69, fig. 3, a, c–e (Aug. 1835).

Codonopsis rotundifolia Royle, t. 62, fig. 2, a–c (April 1835).

Corvisartia indica [DC. ex] Royle, t. 60, fig. 1, a–c (April 1835). Name adopted by Lindley in Bot. Reg. 1842, **28,** Misc. 58. On transference to *Inula*, the species was re-named *Inula Royleana* DC. in DC. Prodr. **5,** 464 (1836), on account of the existence of *Inula indica* L. (1763).

Corydalis cashmeriana Royle, t. 16, fig. 1, a–c (Sept. 1833).

Crocus sativus var. *cashmerianus* Royle, t. 90, fig. 1, cum anal. b (May 1836).

Cucumis Hardwickii Royle, p. 220 (Aug. 1835).—The figure (t. 47, fig. 3, a), issued previously, is unaccompanied by dissections.

Cucumis pseudo-Colocynthis Royle, t. 47, fig. 2, b (Jan. 1835).

Cyananthus Wall. ex Benth. in Royle, p. 309 (May 1836).—The generic name was not validated by the appearance of the plate (t. 69, fig. 1, 2), since the genus was not monotypic.

Cyananthus integer Wall. ex Benth. l.c., p. 309 (May 1836).—The figure (t. 69, fig. 2) lacks dissections.

Cyananthus lobatus Royle, t. 29, fig. 1, a, b (Aug. 1835).—The specific epithet *lobatus* dates, for purposes of priority, from 1835, whereas the generic name was not validated until 1836.

Cyathidium Lindl. ex Royle, t. 56, fig. 2, a–d (April 1835).

Cyathidium taraxacifolium Lindl. l.c.

Daphne mucronata Royle, p. 322, t. 81, fig. 2, a–i (May 1836).

Delphinium cashmerianum Royle, t. 12, fig. 1–5 (Sept. 1833).

Dendrobium alpestre Lindl. ex Royle, t. 88, fig. 2, a–f (May 1836), non Swartz (1799).

Deutzia corymbosa Royle, t. 46, fig. 2, a, b (Jan. 1835).

Dictamnus himalayanus Royle, t. 29 (sphalm. 28), fig. 1–7 (June 1834).

Echinops nivea Wall. ex Royle, t. 56, fig. 1 (April 1835).—The figure lacks analyses, and there is no description in the text (p. 251). The valid publication of the name apparently dates from DC. in DC. Prodr. **6,** 526 (1837).

Edwardsia mollis Royle, t. 32, fig. 2, b–i (June 1834).

Elaeagnus parvifolia Wall. ex Royle, p. 323, t. 81, fig. 1, a–c (May 1836).

Epilobium laxum Royle, p. 211 (April 1835).—The figure, issued previously, lacks analyses.

Eriocaulon Sollyanum Royle, p. 409, t. 97, fig. i, a, b, d–f, i (1840). —There is no description in the text, but the name is validated by the analyses accompanying the figure. It has therefore priority over *E. trilobum* Koern. in Linnaea, **27,** 645 (1856), which has been adopted in Fl. Brit. Ind. and Engl. Pflanzenreich.

Eriocycla Lindl. in Royle, t. 51, fig. 2, a–c (Jan. 1835).

Eriocycla nuda Lindl. l.c.

Euphorbia cashmeriana Royle, p. 329, t. 82, fig. 4, a, b (May 1836).

Euphorbia humilis Royle, p. 329, t. 82, fig. 2 (May 1836).

Euphorbia nana Royle, p. 329, t. 82, fig. 3, a–c (May 1836).

Euphorbia pentagona Royle, p. 329, t. 82, fig. 1, a–e (May 1836).

Falconeria Royle, p. 354 (Febr. 1839).

Falconeria insignis Royle, p. 354, t. 98 (84a), fig. 2, a–m (Febr. 1839).

Falconeria Wallichiana Royle, p. 354 (Febr. 1839). *F. Wallichii* Royle, t. 98 (84a), fig. 3, b–f (Febr. 1839).—Since the text and plate were published together, the name in the former takes precedence.

Gagea elegans Wall. ex Royle, p. 388 (1840).—The figure (t. 95, fig. 2) lacks analyses.

Galatella (sphalm. *Galatilla*) *juncea* Lindl. ex Royle, t. 58, fig. 3 (April 1835).—The figure is unaccompanied by analyses, and there is no description in the text (p. 251). The valid publication of the name dates from DC. in DC. Prodr. **5,** 257 (1836).

Gaultheria trichophylla Royle, t. 63, fig. 3, a–e (Aug. 1835).

Gaylussacia serrata Lindl. ex Royle, p. 257, t. 79, fig. 2, a–d (Dec. 1835).—Based on *Agapetes serrata* G. Don, Gen. Syst. **3,** 862 (1834).

Genista versicolor Wall. ex Royle, t. 34, fig. 2, a–c (June 1834).—Transferred by Bentham (p. 198) to *Caragana* as *C. versicolor* Benth. (April 1835).

Gentiana contorta Royle, t. 68, fig. 3, a–c (Aug. 1835).

Gentiana coronata Royle, t. 68, fig. 1, a–c (Aug. 1835).

Gentiana kurroo Royle, t. 68, fig. 2, a, b (Aug. 1835).

Geranium Lindleyanum Royle, t. 27, fig. a–d (March 1834).

Grewia elastica Royle, t. 22, fig. 1–6 (Sept. 1833).

Gymnandra cashmeriana Royle ex Benth. Scroph. Ind. 47 (? Aug. 1835) ; Royle, Ill. t. 73, fig. 3, a–c (Dec. 1835).

Holostemma Brunonianum Royle, t. 66, fig. 2, sine anal. (Aug. 1835).—No description of this species was given by Royle (p. 276), as he had lost the specimens from which it was drawn. The name was validly published by Decaisne in DC. Prodr. **8,** 533 (1844).

Hordeum Aegiceras [Nees ex] Royle, t. 97, fig. 2, sine anal. (1840).—The name was not validly published, there being neither description nor analyses. The plant is now treated as a variety of *H. vulgare* L.

Impatiens bicolor Royle, t. 28, fig. 1, a–h (March 1834).

Impatiens glandulifera Royle, t. 28, fig. 2, cum nodi analysi (March 1834).—The corresponding description appeared in part V (Jan. 1835). *I. glandulifera* Royle therefore antedates *I. glandulifera* Arn. in Hook. Compan. Bot. Mag. **1**, 322, since the latter was not published until June 1836. The name *Impatiens Roylei* Walp. Rep. **1,** 475 (1842), substituted by Walpers for *I. glandulifera* Royle, was accordingly superfluous and must be rejected. *I. glandulifera* Arn., a native of Ceylon, now bears the name *I. taprobanica* Hiern (1900).

Incarvillea diffusa Royle, t. 72, fig. 1, a–l (Dec. 1835).—Antedates the name *I. arguta*, published on p. 296 (May 1836). Hence the species, now known as *Amphicome arguta* Royle ex G. Don, becomes **Amphicome diffusa** (*Royle*) *Sprague*, comb. nov.

Iris longifolia Royle, p. 372, t. 91, fig. 2, a–c (Febr. 1839).—A later homonym of *I. longifolia* Schneev. (1793).

Isopyrum microphyllum Royle, t. 11, fig. 4, a, b (Sept. 1833).—Now placed in the genus *Paraquilegia* as *P. microphylla* (Royle) J. R. Drumm. et Hutch.

Kohautia coccinea Royle, t. 53, fig. 1, a–e (Jan. 1835).

Lantana dubia Wall. ex Royle, p. 300 (May 1836).—The figure (t. 73, fig. 2) has no analyses.

Leucostemma angustifolium Royle, t. 21, fig. 2, a–e (March 1834).—The species is now known as *Stellaria Webbiana* (Benth.) Edgew. et Hook. f.

Ligularia arnicoides [DC. ex] Royle, t. 60, fig. 2, a, b (April 1835). The valid publication of the name dates from Royle's "Illustrations," not from DC. Prodr. **6,** 314 (1837), as generally cited.

Lilium Thomsonianum Royle, t. 92, fig. 1, a–c (Febr. 1839).—*Fritillaria Thomsoniana* D. Don in Royle, p. 388 (1840).

Lloydia himalensis Royle, t. 93, fig. 2, a, b (Febr. 1839).

Lloydia kunawurensis Royle, t. 93, fig. 3, a–c (Febr. 1839).

Lonicera bracteata Royle, t. 53, fig. 2, a–e (Jan. 1835).

Lychnis fimbriata Wall. ex Royle, t. 20, fig. B, 1, 2 (March 1834).—Treated as a variety of *Lychnis indica* (Roxb.) Benth. in Fl. Brit. Ind. **1,** 225.

Lythrum cashmerianum Royle, t. 44, fig. a–g (Sept. 1834).

Meconopsis aculeata Royle, p. 67 (March 1834).—The plate (t. 15) is without analyses.

Morina Wallichiana Royle, t. 55, fig. 1, e–f (April 1835).

Mulgedium macrorhizum Royle, t. 61, fig. 1, a–c (April 1835).

Mulgedium sagittatum Royle, t. 61, fig. 2, a–c (April 1835).

Murdannia Royle, p. 403 (1840).—The new generic name *Murdannia* was not validated by the provision of a figure with analyses, since the genus, although monotypic, was not based on a new species.

Murdannia scapiflora Royle, p. 403 (1840).—A new combination for *Commelina scapiflora* Roxb. The combination *Murdannia scapiflora* appeared on t. 95, fig. 3 (Febr. 1839), but was there unaccompanied by any reference, either direct or implied, to the synonym on which it was based; the valid publication dates from the issue of the corresponding text, p. 403.

Myricaria bracteata Royle, t. 44, fig. 2, a–c (Sept. 1834).

Olea ferruginea Royle, t. 65, fig. 1, a–g (Aug. 1835).

Osmorrhiza laxa Royle, t. 52, fig. 1, a–b (Jan. 1835).

Parnassia nubicola Wall. ex Royle, t. 50, fig. 3, a–g (Jan. 1835).—Royle's description (p. 227) followed in Aug. 1835. The species is cited in Fl. Brit. Ind. **2,** 402 from Wight, Ill. [**1,** 45] t. 21 (1840).

Picrorhiza kurrooa Benth. Scroph. Ind. 47 (? Aug. 1835); Royle, t. 71, fig. 2, a–c, e–g (Dec. 1835).—Bentham cited Royle's figure, of which he had doubtless seen a proof. On p. 55 of his Scrophularineae Indicae is a postscript written in July 1835, and it is

therefore probable that the pamphlet appeared in August of that year. The title page bears the date 1835.

Pinus khutrow Royle, t. 84, fig. 1, a–d (May 1836).

Polygala furcata Royle, t. 19, fig. B, 1–4 (March 1834).—This antedates *P. glaucescens* Wall. ex Royle, p. 76 (June 1834), which A. W. Bennett (Fl. Brit. Ind. **1,** 201) reduced to *P. triphylla* Ham. ex D. Don (1825), as a variety. Chodat (Monogr. Polygal. 41) does not even recognize the variety.

Polygala myrsinites Royle, t. 19, fig. A, 1–3 (March 1834).—This antedates the name adopted in the text, *P. elegans* Wall. ex Royle, p. 76 (June 1834), which is regarded as a distinct species by Chodat (Monogr. Polygal. 350).

Populus ciliata Wall. ex Royle p. 346, t. 98 (84a), fig. 1 (Febr. 1839).

Potentilla Cautleyana Royle, p. 207 (April 1835).—The corresponding figure (t. 40, fig. 1), published in Sept. 1834, is without analyses.

Potentilla Inglisii Royle, p. 207 (April 1835).—The figure (t. 41, fig. 3), issued previously, lacks analyses.

Potentilla pteropoda Royle, p. 207 (April 1835).—The figure (t. 40, fig. 2), issued in Sept. 1834, lacks analyses.

Potentilla Saundersiana Royle, p. 207 (April 1835).—The figure (t. 40, fig. 1), published previously, lacks analyses.

Primula elliptica Royle, t. 76, fig. 2, anal. 1–2 (Dec. 1835).

Primula obtusifolia Royle, p. 311 (May 1836).—The figure (t. 77, fig. 1) lacks analyses.

Primula purpurea Royle, p. 311 (May 1836).—The figure (t. 77, fig. 2) lacks analyses.

Primula rosea Royle, t. 76, fig. 1, anal. 1–3 (Dec. 1835).

Prinsepia Royle, t. 38, fig. 1, a–g (Sept. 1834).—The generic name was validated by the figure and analyses. The corresponding description (p. 206) did not appear till April 1835.

Prinsepia utilis Royle, t. 38, fig. 1, a–f (Sept. 1834).

Procris obtusa Royle, t. 83, fig. 3, cum anal. (May 1836).—Not mentioned in the text of Urticeae (pp. 333–335). Reduced to *Lecanthus peduncularis* (Royle) Wedd. in DC. Prodr. **16,** pt. 1, p. 164 (1869).

Procris peduncularis Royle, t. 83, fig. 2, cum anal. (May 1836).—Not mentioned in the text of Urticeae. Now placed in the genus *Lecanthus,* as *L. peduncularis* (Royle) Wedd.

Procris racemosa Royle, t. 83, fig. 1, cum anal. (May 1836.)—Name not mentioned in the text of Urticeae (pp. 333–335). Reduced to *Pilea Wightii* Wedd. by Weddell in DC. Prodr. **16,** pt. 1, p. 194 (1869), and treated in Fl. Brit. Ind. **5,** 555 (1888), as a variety of that species, var. *Roylei* Hook.

Pycnocycla Lindl. t. 51, fig. 1, a–h (Jan. 1835).

Pycnocycla glauca Lindl. l.c.

Quercus dealbata Royle, t. 84, fig. 2 (May 1836).—This was an error for *Q. dilatata*, and was corrected in copies issued subsequently. The figure is unaccompanied by analyses, and there is no description in the text (p. 346). The name *Q. dilatata* Lindl. was, however, validly published by Alph. DC. in DC. Prodr. **16,** pt. 2, p. 41 (Nov. 1864).

Ranunculus polypetalus Royle, p. 54 (March 1834), non Raf. (1817). —The figure (t. 11, fig. 2) is without analyses.

Rheum spiciforme Royle, t. 78, fig. 1–5 (Dec. 1835).

Rheum Webbianum Royle, p. 318 (May 1836).—The figure (t. 99 or 78a) did not appear until Febr. 1839.

Rosa Webbiana Wall. ex Royle, p. 208 (April 1835).—The figure, published previously, lacks analyses.

Roscoea alpina Royle, t. 89, fig. 1, a–k (May 1836).

Roscoea lutea Royle, t. 89, fig. 2, a–l (May 1836).

Roscoea purpurea Royle, t. 89, fig. 3, a–e (May 1836), non Sm. (1806).

Saxifraga ciliata Royle, p. 227 (Aug. 1835).—The corresponding figure (t. 49, fig. 2) is without dissections.

Saxifraga imbricata Royle, p. 226 (Aug. 1835).—The figure (t. 49, fig. 1) lacks dissections.

Saxifraga spinulosa Royle, t. 50, fig. 2, a–e (Jan. 1835).—Antedated by *S. spinulosa* Adams (1817). Hence the name *S. mucronulata* Royle was substituted by Royle, p. 227 (Aug. 1835).

Saxifraga stenophylla Royle, p. 227 (Aug. 1835).—The figure (t. 50, fig. 1) has no dissections.

Scabiosa speciosa Royle, t. 55, fig. 2, a–d (April 1835).

Sedum azureum Royle, p. 222 (Aug. 1835).—The figure (t. 48, fig. 2) has no dissections.

Sedum coccineum Royle, p. 223 (Aug. 1835).—The figure (t. 48, fig. 3), has no dissections.

Sedum linearifolium Royle, p. 222 (Aug. 1835).—The figure (t. 48, fig. 1) has no dissections.

Sibbaldia purpurea Royle, t. 40, fig. 3, a, b, e–g (Sept. 1834).

Sieversia elata Royle, t. 39, fig. 1, a–b (Sept. 1834).

Silene Falconeriana Royle, t. 20, fig. A, 1–3 (March 1834).

Smilax Villandia Ham. ex Royle, p. 384, t. 94, fig. 2 (Febr. 1839).

Smithia ciliata Royle, t. 35, fig. 2, a, b (June 1834).

Sonerila tenera Royle, t. 45, fig. 2, a–e (Sept. 1834).

Swertia alternifolia Royle, t. 67, fig. 2, a (Aug. 1835).

Swertia caerulea Royle, t. 67, fig. 1, a–d (Aug. 1835).

Syringa emodi Wall. ex Royle, t. 65, fig. 2, a–c, e, f (Aug. 1835). —Antedates the description in G. Don, Gen. Syst. **4,** 51 (1837).

Thermopsis barbata Royle, t. 32, fig. 1, a–m (June 1834).

Thibaudia variegata (Roxb.) Royle, p. 257, t. 79, fig. 1, a–e (Dec. 1835).—Based on *Ceratostema variegatum* Roxb. Fl. Ind. **2,** 413 (1832). The name *Thibaudia variegata* was published by Royle as a new combination for *Ceratostema variegatum* Roxb., and must under

International Rules be treated as a synonym of that species, although the plant figured by Royle is referred by C. B. Clarke to another species, as *Agapetes setigera* var. *Roylei* (Kurz) C. B. Clarke (Fl. Brit. Ind. **3**, 443).

Trillium Govanianum Wall. ex Royle, p. 384 (1840).—The figure (t. 93, fig. 1) has no dissections.

Uvularia Leschenaultiana Wall. ex Royle, t. 96, fig. 2, a–d (Febr. 1839).—The name adopted in the text, p. 386 (1840), is *Disporum Leschenaultianum* (Royle) D. Don in Proc. Linn. Soc. **1**, 45 (1839).

Viola kunawarensis Royle, p. 75 (March 1834). The figure (t. 18, fig. 3) is unaccompanied by analyses.

XLVIII—CONTRIBUTIONS TO THE FLORA OF TROPICAL AMERICA: XVII.* The genus Strychnos in British Guiana and Trinidad.

N. Y. Sandwith.

Thanks chiefly to recent efforts of the Forest Department of British Guiana, much material of this genus, so well-known for its poisonous and medicinal properties, is now available for examination and it is possible to provide a fairly comprehensive account of the species occurring in this Colony and in Trinidad. Nine species are now known in British Guiana, one of which is the solitary representative of the genus in Trinidad. This number compares favourably with the eight recorded from Venezuela (*Bredemeyeri, curare, Fendleri, Gubleri, guianensis, panurensis, syntoxica, toxifera*), and still more so with the lonely Surinam species (*guianensis*) ; but it is clear that these totals are purely due to accident, since the distribution of bush-ropes with uncertain flowering seasons in the vast forest areas of tropical America must remain for many years a subject for speculation.

Thus five of the nine species discussed below are at present only known from British Guiana, but there is no reason to suppose that they do not occur outside the colony, nor can a definite habitat within its boundaries be assigned with confidence to any of the nine. *S. tomentosa*, a supposed endemic, grows both in the far interior and in the coastal rain forest, and the same may be said of *S. toxifera*, which extends to Panama ; while *S. pedunculata*, which is well-known in the savannah districts of Pirara and Roraima, re-appears in Trinidad. Again, *S. Melinoniana* was described from French Guiana, but has not yet been collected in the intervening region of Surinam.

All the species belong to the morphological type which climbs by tendrils; none of the spiny, bushy, type which is plentiful in Brazil and Eastern Peru has yet been found in the savannah districts of British Guiana. The best characters are to be found in the position of the inflorescence, in the indumentum of the leaves and young branchlets, the length of the corolla relative to the calyx, and the shape and

*Continued from *K.B.* 1933, 339.

indumentum of the calyx lobes. The size and texture, and even the shape, of the leaves of plants which climb in every possible situation and to every attainable height are naturally variable on different branches, according to age ; of the species here considered only *S. guianensis* can be said to bear uniformly small leaves. The venation of the leaves can only be used for distinguishing the species after considerable experience with much material of all of them. The inner pair of nerves has been proved, in the same collection of *S. Melinoniana*, to arise both from the base of the leaf and far above it. On the other hand, the intricacy of the reticulation, though impossible to define on paper, and the presence or absence of verrucular dots, have been found to be valuable and apparently reliable characters. Finally, it is of interest to note that all the species (flowers are unknown in *S. cogens*) have a glabrous ovary and style except *S. Melinoniana*, in which the ovary is whitish-pilose in the upper half and the style pilose at the base. It is unfortunate that the ripe fruits, which differ greatly in size, are for the most part unknown.

The following examination of these species includes four points which may be considered of some importance as a contribution to the study of *Strychnos* in tropical America :—

(*a*) The true specific affinity, in the section *Longiflorae*, of the very rare species, *S. cogens*, is indicated.

(*b*) The supposed endemic, *S. trinitensis*, of Trinidad, is reduced to *S. pedunculata*.

(*c*) The composite nature of *S. smilacina* Benth. is discussed and it is shown that the greater part of Bentham's description is based on the type collection of the previously described *S. Mitscherlichii* Rich. Schomb. The trivial *smilacina* is accordingly not adopted for any plant occurring in this area.

(*d*) The combination *S. guianensis* (Aubl.) Baill. is upheld as the correct name for the plant which is so often called *S. Rouhamon* Benth.

Key to the Species of Strychnos occurring in British Guiana and Trinidad.

Branchlets ascending-pilose and puberulous ; leaves very finely and densely granular-punctate above, glabrous on both surfaces except for the margins and principal nerves which are distinctly pilosulous, especially on the lower surface, sometimes glabrous on the upper surface with age ; inflorescence unknown (probably terminal) ..... 1. *cogens*.

Species without such a combination of characters on branchlets and leaves :

Inflorescences terminal or axillary ; corolla tube longer than the lobes, usually conspicuously so (Section *Longiflorae* Progel) :

Leaves with conspicuous indumentum ; inflorescences terminal :

Branchlets and leaves with long spreading hairs ; calyx lobes linear-lanceolate..... 2. *toxifera*

Branchlets and leaves with short adpressed hairs :

Leaves 1–3·6 cm. broad, densely woolly beneath ; calyx lobes ovate ; corolla tube 12 mm. long or more ; stamens exserted.....3. *tomentosa*.

Leaves 3–8 cm. broad, densely softly pubescent beneath ; calyx lobes lanceolate ; corolla tube 8 mm. long ; stamens included.....4. *diaboli*

Leaves glabrous, or very minutely sparsely pubescent beneath ; inflorescences axillary :

Leaves granular-punctate above (cf. *S. cogens*), sparsely but regularly very minutely pubescent beneath ; calyx lobes deltoid-triangular, acute, fulvous-puberulous outside.....
5. *Erichsonii*.

Leaves not granular-punctate above, glabrous beneath ; calyx lobes ovate to ovate-lanceolate, blunt, pubescent, or glabrous and ciliate outside :

Leaves firmly chartaceous, scarcely coriaceous, very intricately reticulate ; rhachis and main branches of inflorescence strongly pubescent ; calyx lobes ciliate and pubescent on the outer surface.....
6. *pedunculata* (*trinitensis*).

Leaves coriaceous, not very intricately reticulate ; rhachis and main branches of inflorescence glabrous ; calyx lobes conspicuously ciliate, but otherwise glabrous.....
7. *Mitscherlichii* (*smilacina*).

Inflorescences axillary ; corolla tube equalling or shorter than the lobes (Section *Intermediae* Solereder ; section *Rouhamon* Progel) :

Branchlets glabrous ; leaves large, 7·5–20 cm. long, 3·5–10 cm. broad, glabrous ; corolla densely pulverulent-tomentellous outside.....8. *Melinoniana*.

Branchlets densely adpressed-tomentose : leaves small, up to 7 cm. long and 3 cm. broad, pubescent beneath and barbate-pilose in the axils of the inner principal nerves ; corolla glabrous outside to the naked eye...9. *guianensis* (*Rouhamon*).

1. **S. cogens** *Benth.* in Hook. Journ. Bot. **3,** 241 (1841) ; Rob. Schomb. in Ann. Nat. Hist. **7,** 411, 417, 421 (1841) ; DC. Prodr. **9,** 16 (1845) ; Benth. in Journ. Linn. Soc. **1,** 105 (1857) quoad exemplum Schomburgkianum tantum ; Progel in Mart. Fl. Bras. **6,** pars 1, 275 (1868) partim quoad exemplum Schomburgkianum tantum, excl. descr. inflorescentiae ; Klotzsch in Rich. Schomb. Reisen, **3,** 1143 (1848) ; Rich. Schomb. Reisen, trans. Roth, **1,** 352–3 (1922).

Uppermost youngest branchlets thin, both pubescent and pilose. *Leaves* ovate to ovate-lanceolate, gradually attenuate to an acuminate apex, rounded or obtuse at the base, 7·5–14 cm. long, 3·3–6·5 cm. wide, chartaceous, olive-green, more or less opaque, quintuplinerved, the inner pair leaving the costa 2–5 mm. above the base, minor venation and granular punctation exceedingly fine

above, reticulation more open and conspicuous beneath; indumentum as given in the key; petiole 3–5 mm. long, with the indumentum of the branchlets, glabrescent with age. *Flowers* and fruit unknown.

British Guiana. On the edges of oases (fide Klotzsch), near Pirara (fide Progel), *Rob. Schomburgk* 156 (Kew, type ! Brit. Mus. ! Cambridge !).

Vernacular name, " Arimaru."

The Spruce collection (no. 2634) from the Rio Uaupés, which bears axillary inflorescences and which was referred to this species by Bentham himself, in his paper in the Journal of the Linnean Society, and by Progel in the Flora Brasiliensis, is completely distinct from *S. cogens*; it was described as *S. panurensis* Sprague et Sandwith in Kew Bull. 1927, 132, and its affinity is certainly with *S. Mitscherlichii* Rich. Schomb. (*S. smilacina* Benth.). The sterile Martin collection from Cayenne, which was also referred to *S. cogens* by Bentham in the same paper, equally lacks the characteristics of that species.

Careful comparison of the indumentum and foliage characters of the solitary collection of *S. cogens* with those of other tropical American species has revealed a definite, and perhaps close, affinity with *S. panamensis* Seem., and a less clear resemblance to *S. tabascana* Sprague et Sandwith and *S. triplinervia* Mart. Since these three species belong to the section *Longiflorae* and bear terminal inflorescences, the nature of those of *S. cogens* may now fairly be assumed to be the same. This discovery is of some interest, since Progel, on the evidence of *Spruce* 2634 (*S. panurensis*), placed *S. cogens* in the section of his key comprising species with axillary inflorescences.

S. cogens, " Arimaru," is repeatedly mentioned by the Schomburgks as one of the ingredients in the manufacture of the Macusi arrow-poison Urari at Pirara. Robert Schomburgk (Ann. Nat. Hist. **7,** 420, 421) writes that when he visited Esmeralda in 1839 he showed his herbarium specimens of *S. cogens* to the natives, and they recognised them as belonging to the plant from which they made their Cumarawa, a poison distinct from and inferior to their Curare (Urari). The Curare of Esmeralda, which has been made so famous by Humboldt's account, was not prepared from *S. toxifera*, which Robert Schomburgk says was unknown to these natives, but from *S. curare* (H.B.K.) Benth. (*Lasiostoma? curare* H.B.K.). Fragmentary material of the type of this species has recently been examined in the Paris Herbarium, and it appears to be allied to *S. guianensis* (Aubl.) Baill. (*S. Rouhamon* Benth.).

The rediscovery of *S. cogens* in flowering condition would be of the greatest importance and interest in view of all that has been written about it in the past.

2. **S. toxifera** *Rob. Schomb. ex Benth.* in Hook. Journ. Bot. **3,** 240 (1841); ex Hook. in Hook. Ic. Pl. 364, 365 (1841); in Ann. Nat.

Hist. **7**, 411, tt. 12, 13 (1841), and in Pharmaceutical Journal, April 1857; Reisen, 97, 331 (1841), trans. Roth, 37, 121 (1931); A. DC. in DC. Prodr. **9**, 16 (1845); Walp. Ann. Bot. **1**, 512 (1849); Benth. in Journ. Linn. Soc. **1**, 104 (1857); Progel in Mart. Fl. Bras. **6**, pars. 1, 271, pl. 73, f. i (1868); M. G. Planchon in Journ. Pharm. et Chim. **5**, 5–6 (1882); Klotzsch in Rich. Schomb. Reisen, **3**, 950 (1848); Rich. Schomb. Reisen, trans. Roth, **1**, cap. ix, passim (1922); Standley in Contr. U.S. Nat. Herb. **27**, 302 (1928).

Leaves membranaceous to thinly chartaceous, very variable in shape and size, not exceeding 16 cm. in length and 7 cm. in width, 5–7-plinerved, inner pair of nerves usually arising far above the base; petiole up to 5 mm. long, with spreading rusty hairs. *Inflorescences* rather loosely corymbose-thyrsoid, up to 3·5 cm. in diameter, densely pilose. *Calyx* lobes 3–4 mm. long, up to 0·6 mm. broad. *Corolla* tube up to 16 mm. long, often much shorter, shortly pulverulent-tomentose outside and densely pilose with long, spreading to ascending, straw-coloured hairs, whitish-woolly in the centre but otherwise glabrous within; lobes whitish-woolly at the base and at the incurved tips, otherwise pulverulent. *Stamens* exserted, filaments scarcely 0·5 mm. long. *Ovary* and style glabrous. *Fruit* like an apple, 6–7 cm. diameter.

British Guiana. Kanaku Mountains, 900 m., fruiting, Dec. 1835, *Robert Schomburgk* 155 (Kew, type ! Brit. Mus ! Paris ! Oxford, without number ! Cambridge, without number ! Berlin.); also seen by him in fruit in June, 1838. Ilamikipang, Kanaku Mountains, 1842, *Richard Schomburgk* 637 (Berlin, fide Progel). Mount Iramaikpang, Kanaku Mountains, 400 m., Aug. 1932 (sterile), *Fr. Mather S. J.* in *Forest Dept.* record no. 2301 (Kew !). Banks of the Sururu River and Pomeroon River, near sea-level, fl. Sept. 1843, *Robert Schomburgk* 769 and 770, *Richard Schomburgk* 1465 and 1448 (Kew ! Brit. Mus ! Paris ! Cambridge ! Berlin.). Arunamai Creek, Pomeroon River, fl. March, 1932, *Davis* in *Forest Dept.* record nos. 2278, 2285 (Kew !); small bush-ropes, 2½–5 in. in girth, fl. greenish-white. Anabisi River, North-west District, fl. Feb. 1922, *la Cruz* 1358 (New York !). Upper Rupununi River, near Dadanawa, June 1922, *la Cruz* 1495 (New York !).

Distr. Venezuela; Maypures, *Crevaux*, fide Planchon l.c. Panama Canal Zone, *Pittier* 2666 (Brit. Mus !). According to Standley the species is not found north of Costa Rica and ranges southward to Brazil, but this requires to be proved by the collection of further material, and not by mere reliance on the names Urari or Curare, which are sometimes applied to other species. A very closely allied species, *S. syntoxica* Sprague et Sandwith in Kew Bull. 1927, 129, was collected by Spruce at the foot of the Cerro Imei, Rio Pacimoni, in Amazonian Venezuela; it was said to be used by the Cunipusana Indians in the fabrication of Curare.

Vernacular names, "Wourali," "Urari," "Curare," "Devil-doer."

The three varieties *acuminata*, *obliqua* and *latifolia*, which were named by Klotzsch and described by Progel in the Flora Brasiliensis, were based on the shape of the leaves and do not appear to have any taxonomic value whatever.

For the history and uses of Urari or Curare, and the part which is played by this species in its fabrication, see the above writings of the Schomburgks and Planchon. "Ourari" was apparently first mentioned as an arrow-poison by Sir Walter Raleigh in 1595. The poison extracted from the bark of *S. toxifera* is of a peculiar deadliness and it was the frequency of this species in the Kanaku Mountains which was responsible for the fame of the Urari which was prepared by the Macusi Indians at such centres as Pirara. Thus Richard Schomburgk, in a paper read before the Philosophical Society in April 1866, wrote, "This renowned strength of the Urari of the Macusi Indians brings whole caravans of Indians from the Rio Negro, Orinoco, and even from the Amazon River to the Canuku (Kanaku) Mountains, to exchange the Urari with the inhabitants for other articles."

3. **S. tomentosa** *Benth.* in Journ. Linn. Soc. **1,** 104 (1857); Progel, l.c. 271; Sandwith in Hook, Ic. Pl. 3175 (1932).—*S. rhexioides* Klotzsch, l.c. 1144, nomen.

Leaves of flowering branchlets membranaceous, opaque, ovate to elliptic or oblong, 5–7-plinerved, principal nerves almost equidistant in the middle of the leaf; petiole fulvous-pubescent like the branchlets, up to 5 mm. long. *Inflorescences* rather loosely corymbose-thyrsoid, up to 4·5 cm. in diameter, adpressed fulvous-pubescent. *Calyx* lobes up to 2·5 mm. long and 1·5 mm. broad. *Corolla* tube fulvous-pilosulous outside, and with a conspicuous series of long spreading hairs simulating those of *S. toxifera*, within densely woolly above, glabrous below, produced within at the apex into a whitish-woolly corona; lobes shortly whitish-woolly and pulverulent within. *Ovary* and style glabrous. *Fruit* not seen.

British Guiana. On stony wooded slopes near Pirara, 1843, fl. Dec.–Jan. (fide Klotzsch), *Robert Schomburgk* 2nd coll. 723 (*Richard Schomburgk* 1095) (Kew, type! Paris! Cambridge! Berlin.). In mixed forest on hill, Moraballi Creek, Essequibo River, Oct. 1929, *Sandwith* 524 (Kew! Distributed to New York, Washington, Rio de Janeiro, Paris, Berlin, Geneva, Stockholm, Utrecht, Leningrad).

Distr. Endemic?

4. **S. diaboli** *Sandwith* in Kew Bull. 1931, 486; in Hook. Ic. Pl. 3175 (1932).

Leaves of flowering branchlets thinly chartaceous, broadly ovate or ovate-elliptic to suborbicular, usually 7-plinerved, nerves not equidistant; petiole fulvous-tomentose like the branchlets and tendrils, 2–6 mm. long. *Inflorescences* dense-flowered, 2–4 cm. in diameter, fulvous-tomentose. *Calyx* lobes 2 mm. long, scarcely 1 mm. broad. *Corolla* tube fulvous-tomentose outside, without a series of

spreading hairs, within glabrous at the base and apex, otherwise adpressed-pilose; lobes clothed at the base within with dense white wool, otherwise pulverulent-tomentellous. *Ovary* and style glabrous. *Fruit* unknown.

British Guiana. In dense forest, Moraballi Creek, Essequibo River, Aug. 1929, *Sandwith* 109 (Kew, type! Distributed to New York, Washington, Rio de Janeiro, Paris, Berlin, Geneva, Stockholm, Utrecht, Leningrad). Mazaruni Station, fl. July-Aug, 1932, *Forest Dept.* record nos. 2295, 2297 (Kew!); bushrope with smooth, dark reddish-brown bark.

Arawak name, "Black Devil-doer."

Distr. Endemic?

The two recent collections from the Mazaruni Station are of great value since they include old fully-developed leaves from sterile branches. These are green and subcoriaceous, up to 13 cm. long and 8 cm. broad, glabrescent above except on the nerves, but still strongly pubescent beneath, while the branchlets and petioles remain tomentose.

5. **S. Erichsonii** *Rich. Schomb. ex Progel* in Mart. Fl. Bras. **6,** pars. 1, 274 (1868); Rich. Schomb. Reisen, **3,** 1082 (1848), nomen.

Old branchlets with a grey cortex and large, closely-set lenticels; young branchlets pruinose, glabrous. *Leaves* oblong-lanceolate or elliptic-oblong, attenuate at both ends, 6–11 cm. long, up to 3·7 cm. wide, shining, thinly coriaceous, usually drying a rather yellowish green, 5–7-plinerved, intricately reticulate on both surfaces; petiole glabrous, 3–6 mm. long; tendrils pruinose, very minutely pubescent or glabrescent. *Inflorescences* pubescent, narrowly thyrsoid with opposite cymes, up to 2·5 cm. long. *Calyx* lobes deltoid-triangular, acute, up to 1 mm. long and hardly 1·2 mm. wide, densely minutely fulvous-puberulous all over the outer surface. *Corolla* tube narrowly cylindrical, up to 8 mm. long, densely granular-papillose outside, glabrous within near the base otherwise densely pubescent; lobes narrow, 3 mm. long, densely woolly within in the lower half, otherwise granular-papillose. *Stamens* with very short filaments, hidden in the wool at the throat of the corolla. *Ovary* and style glabrous. *Fruit* not seen.

British Guiana. Upper Corentyne River, fl. July–Oct. 1843, *Robert Schomburgk* 1580 (isotype, Berlin!), and 46 of "last small set" (Kew!). Borders of forest, Roraima, fl. January, *Richard Schomburgk* (type, Berlin?). The following sterile specimens with large leaves agreeing in essentials with those of this species may be referred here: Arunamai Creek, Pomeroon River, March 1932, *Davis* in *Forest Department* no. 2284 (Kew!); Issororo Creek, Pomeroon River, Feb. 1932, *Davis* in *Forest Department* no. 2259 (Kew!).

Distr. Endemic? Specimens recently distributed under this name from Brazil (Pará, *Ducke* 18536, 18538) cannot possibly be identified with the authentic material of *S. Erichsonii*, although they

represent an allied species. They are immediately distinguished from *S. Erichsonii* by the pilosulous (not papillose) corolla tube and by the lobes being woolly all over the inner surface.

The combination of a granular-verruculose upper leaf-surface with minute scattered pubescence on the lower surface is present in other species of *Strychnos*, as is shown by the Brazilian specimens which have been wrongly referred to *S. Erichsonii* and by similar material from British Honduras distributed as *S. Peckii* Rob.

6. **S. pedunculata** (*DC.*) *Benth.* in Journ. Linn. Soc. **1,** 105 (1857) ; Progel in Mart. Fl. Bras. **6,** pars 1, 275 (1868).—*Rouhamon pedunculatum* DC. Prodr. **9,** 561 (1845). *Strychnos Schomburgkiana* Klotzsch in Rich. Schomb. Reisen, **3,** 1144 (1848), nomen ; vide etiam Rich. Schomb. Reisen, trans. Roth, **2,** 140 (1923). *S. trinitensis* Griseb. Fl. Brit. W. Ind. 407 (1861).

Young branchlets pubescent or becoming glabrous. *Leaves* ovate to elliptic-oblong or oblong-lanceolate, shortly obtusely acuminate at the apex, abruptly cuneate at the base, 4–12 cm. long, 2–6 cm. wide, shining, firmly chartaceous to thinly coriaceous, 5-plinerved, intricately reticulate on both surfaces ; petiole minutely pubescent, becoming glabrous, up to 7 mm. long. *Inflorescences* pubescent, narrowly thyrsoid with opposite cymes, up to 4·5 cm. long ; pedicels 1–3 mm. long. *Calyx* lobes unequal, ovate or rather narrowly ovate-lanceolate, blunt, up to 1·3 mm. long, 0·6–1 mm. wide, thinly pubescent on the outer surface, ciliate. *Corolla* tube very slender and narrowly cylindrical, up to 6 mm. long, sometimes only 3 mm. long, very minutely papillose outside and often seeming almost glabrous, glabrous within towards the base otherwise rather thinly pilosulous ; lobes narrow, scarcely 3 mm. long, densely woolly within in the lower third, otherwise granular-papillose. *Stamens* subsessile, included, inserted below the wool at the throat of the corolla. *Ovary* and style glabrous, style rather short during the flowering season. *Fruit* not seen.

British Guiana. Roraima, fl. Nov., *Schomburgk* 482=792 B (isotype, Kew ! Brit. Mus. ! Cambridge ! Paris ! Berlin.). Cotinga River, W. of Pirara, fl., *Richard Schomburgk* sine numero (Kew ! Cambridge ! Paris, sub no. 792 ! Berlin.). Rupununi Savannahs, Pirara, fl. Sept. 1931, *Davis* in *Forest Department* no. 2184 (Kew !) : a bush-rope in savannah forest ; flowers white, sweet-scented.

Trinidad. Caura, fl. Sept. 1849, *Crueger* (type or isotype of *S. trinitensis*, Kew !).

Arawak name, " Devil-doer." Richard Schomburgk mentions this species as providing, under the name " Yakki," an ingredient of the arrow-poison of the Macusi Indians.

Distr. British Guiana and Trinidad.

The material collected by Davis, when he rediscovered this rare species, is of value since it proves that the corolla may be much longer than was shown by Schomburgk's specimens at Kew, which otherwise agree with his in every respect. From the measurements

(1½ lines) given by Progel in the Flora Brasiliensis, it is evident that the Berlin material of the Schomburgk collections bears equally short corollas, but De Candolle originally described the corolla tube of Schomburgk 482 at Geneva as 3 lines long. Progel, in any case, was quite wrong in placing this species in his section *Rouhamon*.

S. trinitensis, whose affinity with *S. pedunculata* was indicated by Solereder in Engl. Pflanzenfam. iv, 2, 39 (1895), is quite evidently conspecific with it ; the distance between the Trinidad locality and those in the interior of British Guiana shows how dangerous it is to describe new endemics from material collected from bush-ropes.

7. **S. Mitscherlichii** *Rich. Schomb.* Reisen, **2,** 451 in obs. (1848) ; reimpr. in Walp. Ann. **1,** 512 (1849).—*S. smilacina* Benth. in Journ. Linn. Soc. **1,** 105 (1857), pro majore parte, excl. spec. Martin. ; Progel in Mart. Fl. Bras. **1,** pars. 1, 274 (1868).

Branchlets glabrous or only very minutely puberulous. *Leaves* broadly ovate to elliptic or oblong, rarely less than 9 cm. long, usually much longer (up to 20 cm.), 3·5–9 cm. wide, shining, coriaceous, conspicuously or inconspicuously quintuplinerved, strongly but not very closely reticulate ; petiole glabrous, blackish in dried material, 5–12 mm. long. *Inflorescences* with black glabrous main branches, narrowly thyrsoid with opposite cymes, up to 4 cm. long. *Calyx* lobes unequal, ovate, blunt, up to 1·3 mm. long and 1 mm. wide, strongly conspicuously ciliate, otherwise glabrous. *Corolla* tube narrowly cylindrical, 5–7 mm. long, papillose outside, glabrous within near the base otherwise pilosulous ; lobes narrow, 2–3 mm. long, densely woolly within in the lower third, otherwise papillose. *Stamens* as in *S. pedunculata*. *Ovary* and style glabrous. *Ripe fruit* not seen.

British Guiana. Barama River, fl. Sept.–Oct., *Schomburgk* 775, *Robert*, and 1516B, *Richard* (Kew ! Brit. Mus ! Paris ! Berlin.). Issororo Creek, Pomeroon River, sterile, Feb. 1932, *Davis* in *Forest Department* no. 2261 (Kew !). Demerara River, fl. June, *Jenman* 5031 (Kew ! New York !), fl. Sept., *Jenman* 3972 (Kew ! New York !). Malali, Demerara River, fl. Oct.-Nov., *la Cruz* 2731 (Kew !). Bonasika Creek, Essequibo River, fr. March, *C. W. Anderson* 298 (Kew !). Upper Mazaruni River, fl. Sept.–Oct., *la Cruz* 2397 (Kew !). *Altson* 441, a sterile plant from Bunsikai Creek, Iruau Creek, North-west District, called " Guanaparu " or " devil-doer " by the Arawaks, seems to belong here (Kew !).

Distr. Endemic ? The sterile Burchell collection from Pará, which was cited by Progel under *S. smilacina*, may perhaps be placed under this species.

Bentham based the description of his *S. smilacina* on two collections, *Robert Schomburgk* 775 (*Richard Schomburgk* 1516) and a *Martin* collection in Cayenne. Of these, the Schomburgk collection bears flowers, whereas the Martin sheets are flowerless, while the description of the leaves, inflorescences and calyx lobes is evidently compiled from both. Thus the Schomburgk collection has the better

claim to be the type of *S. smilacina*, since the description of the corolla can apply to it alone. But the Schomburgk collection is clearly the type collection of *S. Mitscherlichii* which was legitimately, though inadequately, described several years previously by Richard Schomburgk in a footnote in his "Travels." This footnote was omitted by Roth in his English translation, but it was reprinted by Walpers a year after the date of its original publication. The description of the calyx lobes and corolla would leave little doubt as to the identification, even it if had not already been published by Progel in his account of the genus in the Flora Brasiliensis where, however, *S. Mitscherlichii* is treated as a synonym of *S. smilacina*. Bentham himself was unable to identify Schomburgk's species with this collection and placed it, with doubt, between *S. brevifolia* Spruce and *S. hirsuta* Spruce in his monograph, see Journ. Linn. Soc. **1,** 106. Before adding the footnote with the description Richard Schomburgk wrote of this species, "A glorious *Strychnos* with its large leathery shining leaves and fragrant smell attracted my attention: it was new, and in honour of the celebrated chemist, Mitscherlich, I called it *Strychnos Mitscherlichii*" (Roth's translation, **2,** 360).

Careful examination of the two Martin sheets from French Guiana shows that they represent a completely different species. The leaves are strongly verruculose above, and regularly minutely puberulous beneath, characters indicating a close affinity with *S. Erichsonii* Rich. Schomb. ex Prog. It is quite probable, therefore, that Bentham's name *smilacina* will be entirely relegated to synonymy in a future monograph of the genus.

A close ally of *S. Mitscherlichii* is *S. panurensis* Sprague et Sandwith which occurs on the Rio Uaupés, Brazil (*Spruce* 2634, type, Kew!) and at Esmeralda in Venezuela (*Tate* 310, New York!). The Spruce sheets, as has already been mentioned, were wrongly referred to *S. cogens* by both Bentham and Progel. The flowers of this species are still unknown, but it is clearly distinguishable from *S. Mitscherlichii* by its definitely lanceolate or ovate-lanceolate leaves which are more finely reticulate, and by its strongly pubescent inflorescence.

8. **S. Melinoniana** *Baill.* in Bull. Soc. Linn. Par. **1,** 256 (1880); Sandwith in Kew Bull. 1931, 487, et in Hook. Ic. Pl. 3174 (1932).

Leaves lanceolate to ovate, shining, usually more or less glaucescent beneath, coriaceous, quinquenerved or (sometimes conspicuously) quintuplinerved; petiole glabrous, blackish, 5–11 mm. long. *Inflorescences* thyrsoid with congested cymes, densely minutely hirtellous. *Calyx* lobes roundish or broadly ovate, obtuse, ciliate, 1 mm. long, up to 1·5 mm. broad. *Corolla* tube 3–3·75 mm. long, up to 3 mm. broad, whitish-woolly within except at the glabrous base; lobes 4–5 mm. long, densely whitish-woolly all over within. *Stamens* exserted, filaments 2–2·5 mm. long. *Ovary* whitish-pilose in the upper half; style pilose near the base, otherwise glabrous. *Ripe*

fruit not seen ; young fruit obovoid, about 11 mm. long and 8 mm. diameter.

British Guiana. Moraballi Creek, Essequibo River, fl. Sept. 1929, *Sandwith* 342 (Kew !, distributed to many herbaria), fr. Oct. 1929, *Sandwith* 377 (Kew !). Issororo River, 1888, coll. *im Thurn* in *Jenman* 5198 (Kew ! New York !). Mairaka, Pomeroon River, fl. March 1932, *Davis* in *Forest Dept.* no. 2286 (Kew !). Arunamai Creek, Pomeroon River, March 1932, *Davis* in *Forest Dept.* no. 2279 (Kew !). Issororo Creek, Pomeroon River, Feb. 1932, *Davis* in *Forest Dept.* no. 2260 (Kew !). Mazaruni Station, fl. Aug. 1932, *Davis* in *Forest Dept.* no. 2303 (Kew !).

Distr. French Guiana.

9. **S. guianensis** (*Aubl.*) *Baill.* Bot. Médic. (Phanér.) 1219 (1884).— *Rouhamon guianensis* Aubl. Hist. Pl. Guiane, 93, t. 36 (1775). *Lasiostoma cirrhosa* Willd. Sp. Pl. **1,** 624 (1798). *L. divaricata* G. F. W. Mey. Fl. Esseq. 83 (1818). *Rouhamon divaricatum* DC. Prodr. **9,** 17 (1845). *Strychnos Rouhamon* Benth. in Journ. Linn. Soc. **1,** 106 (1857) ; Progel in Mart. Fl. Bras. **6,** pars. 1, 276, t. 76 (1868) ; van Raalte in Pulle, Fl. Surinam, **4,** 109 (1932).

Leaves elliptic, oblong or obovate, acute or shortly cuspidate at the apex, cuneate at the base, slightly shining or rather opaque, usually conspicuously quintuplinerved, stiffly chartaceous or thinly coriaceous ; petiole densely pubescent, 2–5 mm. long. *Inflorescences* pseudo-racemose, lax-flowered, densely pubescent. *Calyx* lobes lanceolate to ovate, more or less acute, ciliate, up to 1·5 mm. long and 0·75 mm. broad. *Corolla* tube 2 mm. long, whitish-woolly within except towards the glabrous base ; lobes up to 5·5 mm. long, densely whitish-woolly within in the lower half. *Stamens* exserted, filaments about 2 mm. long. *Ovary* and style glabrous. *Fruit* when ripe about 1·3 cm. diameter.

British Guiana. Essequibo River (fide Progel), fl. Oct.-Nov., *Robert Schomburgk* 948 (Kew ! Brit. Mus. ! Cambridge ! Paris ! Berlin.). Lama Creek, Corentyne River, fl. and fr. Dec. 1887, *Jenman* 4303 (Kew !) ; fl. and fr. April 1889, *Jenman* 4651 (Kew ! Brit. Mus. ! New York !). Without locality, *Rudge* (Brit. Mus !).

Distr. Guiana, Amazonian Brazil and Venezuela.

It has not seemed desirable on present evidence to separate varieties or species based on the shape of the leaves or the calyx lobes, when the material agrees in other respects. Moreover, there seems to be no definite correlation between these two characters. It may be mentioned here that the calyx lobes of Schomburgk's collection are ovate, while those of Jenman's are longer and lanceolate, in this agreeing with *S. lanceolata* Spruce ex Benth. which should probably be reduced to *S. guianensis*. Further collecting and field observations of plants of this affinity would be welcome.

XLIX—BOTANICAL TERMS IN ISIDORUS.*

T. A. Sprague.

The best known work of Isidorus of Seville (A.D. 560–636) is probably his " Etymologiarum libri XX," which is an etymological glossary of encyclopaedic extent, covering all branches of human knowledge. This work is very valuable to the philologist, since it affords evidence of the nature of the Latin language as used in Spain at the beginning of the Dark Ages : it contains various new words, and other words employed in new senses. To the botanist it is of some importance in the history of botanical terminology, lib. XVII being devoted to Agriculture and the Vegetable Kingdom, and lib. IV to Medicine and Pharmacy.

In Agriculture, the term *occatio* meant, not harrowing, as in classical times, but breaking up clods of earth with a mattock; and *cinis* (lit. ashes) denoted the clearing of land by means of burning. *Stipulae* was used for the leaf-sheaths of Grasses, as well as in the sense of stubble. *Stipa* was straw, not tow. *Arbustum*, while retaining its classical meaning of a plantation of trees, had come to be used also in the sense of sapling. *Vepres* was a spiny tree, not a thornbush. *Corymbus* was a coil of a tendril, and *cyma* was employed with the same meaning as *coma*, namely, for the leafy crown of a tree. The case of *hastula* is amusing. It has no real connection with the classical word *hastula* (dim. of *hasta*), a little spear, but is a corrupted form of *assula* (*astula*), a splinter. This may be seen by comparing Isidorus, " fomes est hastula, quae ab arboribus excutitur recisione," with Festus, " fomites sunt assulae ex arboribus, dum caeduntur, excussae." Similarly, the definition of *torris*, " torris lignum adustum, quem vulgus titionem appellat extractum foco, semiustum et extinctum " was taken by Isidorus from Lactantius, " titionem vulgus appellat extractum foco torrem semiustum et exstinctum."

We learn from Isidorus that inula (*Inula Helenium*) was known to the Spanish peasantry of his time by the name ala : " inula, quam alam rustici vocant, radice aromatica, odoris summi, levi acrimonia." The same name appears later under the forms alan, aland, and alant in German mediaeval and sixteenth century works, and the species is known at the present day as ala in Spain and as alant in Germany and Holland. Since *Inula Helenium* is indigenous in Spain, but is merely an introduced plant in Germany and Holland, it seems probable that the form " alam " was taken from Isidorus by mediaeval German herbalists, and was then gradually transformed into " alan " and " alant."

The fungi known as volvi, mentioned by Isidorus after tubera (truffles) were evidently puffballs, probably *Lycoperdon giganteum* (*L. Bovista*) : "volvi dicti, quod sint volubiles et rotundi." These were called pezicae by Pliny.

*See " Botanical terms in Pliny's Natural History " (*K.B.* 1933, 30).

The text of Isidorus consulted for the present paper is that adopted in Corpus Grammaticorum Latinorum veterum, ed. F. Lindemannus, Tomus III, Lipsiae, 1833. All the citations in the glossary are taken from Lib. XVII. Hence only the page, chapter and section numbers are given. Thus the reference to *corymbus* (527, v, 12) indicates p. 527, Lib. XVII, Cap. v, sect. 12.

Glossary.

arbor, a tree, in general, whether barren or fruit-bearing (vide infra).

arbos, a fruit-bearing tree :—Arbor vero et fructifera et sterilis, arbos autem non nisi fructifera. Genere autem femenino arbores dicimus, poma vero neutro (530, vi, 3).

arbustum, (1) young tree or sapling, suitable for use as a stock in grafting ; (2) plantation of trees, or wood :—Arbustum arbor novella et tenera, in qua insertio fieri potest, et dicta arbusta, quasi arboris hasta. Alii arbustum locum, in quo arbores sunt, volunt accipere, sicut salictum. Sic et virectum, ubi virgulae novellae et virentes (530, vi, 2) : Arborum nomen, sive herbarum ab arvis inflexum creditur, eo quod terris, fixis radicibus adhaereant. Utraque autem ideo sibi pene similia sunt, quia ex uno alterum gignitur. Nam dum sementem in terram ieciris, herba prius oritur, dehinc confota surgit in arborem, et infra parvum tempus, quam herbam videras, arbustum suspicis (529, vi, 1).

arista, awn :—Arista appellata, quod prius ipsa arescat (525, iii, 16).

aviarium, a remote grove :—Aviaria secreta nemora dicta, quod ea aves frequentant (530, vi, 9).

botrio [*botrys*], a bunch of grapes :—Racemus est botrionis pars, et botrio Graecum est (528, v, 14).

capreolus, tendril :—Capreoli dicti eo, quod capiant arbores, sunt enim cincinni, sive uncinuli, quibus se innectere vites et suspendere solent arboribus, quo adminiculo freti palmites ventos ac turbines sustinere queant, et sine lapsu periculorum fructus suos sustineant, ac sese vaga proceritate diffundant (527, v, 11).

caries, decay or rotting of wood :—Caries putredo lignorum, dictum hoc nomen, quod eveniat lignis virtute carentibus (532, vi, 28).

caulis, (1) main stem of a herb or vegetable ; (2) cabbage :—Caulis est generaliter herbarum et olerum mediius frutex qui vulgo thyrsus dicitur, quod a terra sursum conscendat, a quo derivatum est, ut specialiter quoddam genus olerum caulis diceretur, quia thyrsus ipsius amplius caeteris oleribus coalescit, id est crescit. Est autem generale nomen. Omnis enim frutex caulis (556, x, 3).

cespites, low growth of stems, clump of plants :—Cespites frutices sunt, quasi cuspites, vel quasi circa pedes (530, vi, 13).

cinis, clearing land by burning before cultivation :—Cinis est incendium, per quod ager inutilem humorem exudat (523, ii, 2).

codex, stock of a grape vine :—Codex dictus, quasi caudex. Sic enim veteres et clodum pro claudo dicebant (527, v, 4).

cortex, bark :—Cortice veteres corucem vocabant. Dictus autem cortex, quod corio lignum tegat (530, vi, 15).

corymbus, coil of a tendril :—Corymbi sunt annuli qui proxima quaeque lignant et comprehendunt, ne longius laxati palmites ventorum flatibus dissipentur (527, v, 12).

culmus, culm, stalk of an ear of corn :—Culmus est ipse calamus spicae, qui a radicibus nascitur. Et dictus culmus, quasi calamus (525, iii, 16).

cyma, leafy crown of a tree, foliage :—Cymas vocatas quasi comas (531, vi, 20).

flagella, (1) flexible uppermost shoots of trees or shrubs :—Flagella dicuntur, ut praediximus, summae arborum partes, ab eo quod crebros ventorum sustinent flatus (531, vi, 19) : Summitates vitium et fruticum flagella nuncupantur, eo quod flatu agitentur (527, v, 8) ; (2) slender whip-like shoots of a herb :—Colocynthis cucurbita agrestis et vehementer amara, quae similiter ut cucurbita per terram flagella tendit (548, ix, 32).

flos, flower, coloured perianth :—Flores nominati, quod cito defluant de arboribus, quasi fluores, quod cito solvantur. In his duplex gratia, coloris et odoris. Austro enim flores solvuntur, Zephyro fiunt (531, vi, 21).

fodere, to dig :—Fodere vero foveam facere, quasi fovere (529, v, 33).

folliculus, glumes of an ear of corn, taken as a whole :—Folliculus est theca frumenti, in qua granum servator interius. Haec super spicam vallo instructo munimen praetendit, ne avium minorum morsibus spica suis fructibus exuatur, aut vestigiis proteratur (525, iii, 17).

fomes, tinder, touchwood (531, vi, 26).

frons, leafy bough, green branch :—Frondes, quod ferant virgulta, vel umbras, sunt enim causa umbrarum (530, vi, 13).

fructus, produce, fruit :—Fructus nomen accepit a frumine, id est eminente gutturis parte, qua vescimur, unde et fruges. Fructus autem proprie dicuntur agrorum et arborum quibus utique utimur. In animalibus vero abusive et translative vocari fructum (531, vi, 23).

fruges (lit. fruits of the earth) unbearded cereals (vide *frumentum*).

frumentum, corn, cereal grass, especially the bearded kinds :—Frumenta sunt proprie, quae aristas habent, fruges autem reliqua (524, iii, 2).

fruteta (pl. of *frutetum*), a tall tree (vide infra).

frutex, a shrub, bush, branched plant, frondose plant :—Frutex brevis est appellatus, qui terram fronde tegat, cuius plurale nomen fruteta arbor alta est (530, vi, 4).

germen, a swelling bud or sprout :—Germen dicimus surculum praegnantem, a gerendo, unde et germinatio (531, vi, 22).

germinatio, sprouting, coming into leaf (vide supra.)

hastula [*astula, assula*], splinter :—Hastula a tollendo nuncupata, fomes est hastula, quae ab arboribus excutititur, recisione aut hastulae ambustae, aut ligna cavata nuncupata a fungis, quod ita capiat ignem. De quo Virgilius : Rapuitque in fomite flammam (531, vi, 26).

incensio stipularum, burning the stubble (523, ii, 1).

insitio, grafting :—Insitio dicitur, cum inciso trunco surculus foecundae arboris sterili inseritur, aut oculorum impositio, cum, inciso cortice, libro alienae arboris germen immittitur (530, vi, 11).

intermissio, lying fallow (523, ii, 2).

legumen, pulse, leguminous plant with edible seeds :—Legumina a legendo dicta, quasi electa. Veteres enim meliora quaeque legebant, sive quod manu legantur, nec lectionem requirant (525, iv, 1). Leguminum plura genera, ex quibus faba, lenticula, pisum, faselum, cicer, lupinum gratiora in hominum usum habentur (526, iv, 2).

liber, bast, inner part of bark :—Liber est corticis pars interior, dictus a liberato cortice, id est ablato. Est autem medium quoddam inter lignum et corticem (531, vi, 16).

lignum, wood, especially firewood :—Ligna dicta, quia accensa convertuntur in lumen. Unde ellychnium dicitur, quod lumen det (531, vi, 25).

lucus, a dark, dense wood or grove :—Lucus est densitas arborum solo lucem detrahens, tropo antiphrasi, eo quod non luceat, sive a luce, quod in eo lucebant funalia, vel cerei propter nemorum umbras (530, vi, 7).

malleolus, mallet-shoot :—Malleolus est novellus palmes innatus prioris anni flagello, cognominatusque ob similitudinem rei, quod in ea parte, qua deciditur, ex veteri sarmento prominens utrimque mallei speciem praebet (527, v, 5).

malum, a large, fleshy fruit, e.g. of *Pyrus, Cydonia, Amygdalus persica, Punica* :—Poma omnia mollia mala dicta sunt, sed cum adiectione terrarum, in quibus antea nata sunt, ut Persica, Punica, Matana, Cydonia, etc. (535, vii, 22).

messis, reaping, harvesting :—Messis a metendo, id est a recidendo dicta (524, ii, 6).

nemus, a shady grove of tall trees :—Nemus a numinibus nuncupatum, quia pagani ibi idola consecrabant. Sunt enim nemora arbores maiores, umbrosae frondibus (530, vi, 6).

nucleus=nux (2).

nux, (1) the walnut tree :—Hanc alio nomine Latini iuglandem vocant, quasi Iovis glandem (535, vii, 21) ; (2) edible kernel with a hard rind, nut, e.g. of *Pinus, Juglans, Corylus, Quercus, Castanea, Amygdalus communis* :—Nuces autem generaliter dicuntur omnia poma corio duriori tecta, ut pineae, nuces, avellanae, glandes, castaneae, amygdalae. Hinc et nuclei dicti, quod sint duro corio tecti (535, vii, 22).

oblaqueare, to trench round the roots of a tree or shrub :—Oblaqueare est circa codicem terram aperire et velut locum efficere. Hoc aliqui excodicare appellant (529, v, 31).

oblaqueatio, trenching round the base of a tree or shrub :—Vitibus inter caetera genera magis ista conveniunt, oblaqueatio putatio, propaginatio, fossio (529, v, 30).

occatio, breaking large clods of earth with a mattock :—Occatio est, cum rustici satione facta bobus dimissis grandes glebas caedunt ac ligonibus frangunt, et dicta occatio quasi obcaecatio, quod operiat semina. Occare igitur est operire terra semina, vites, vel arbores (523, ii, 4).

oculus, a vegetative bud :—Oculi nodi sunt, ex quibus frondes exeunt (530, vi, 13).

olus, vegetable :—Olus ab alendo dictum, eo quod primum homines ab oleribus alerentur, antequam fruges et carnes ederent. Tantum enim pomis arborum, vel oleribus alebantur, sicut animalia herbis (556, x, 2).

palea, chaff :—Palea a quibusdam vocari dicitur, quod pala ventiletur, ut frumentum purgentur (525, iii, 19).

palmes, young, soft-wooded, fruit-bearing shoots of the vine :—Palmes vitis materia mollis, qui per novella brachia emissus fructum affert. Nam ideo rustici partem vitis palmitem dicunt (527, v, 9).

pampinus, foliage of the vine :—Pampinus est folia, cuius subsidio vitis a frigore, vel ardore defenditur, atque adversus omnem iniuriam munitur. Qui ideo alicubi intercisus est, ut et solem ad maturitatem fructus admittat, et umbram faciat. Et dictus pampinus, quod de palmite pendeat (527, v, 10).

plantae, *plantaria*, transplanted seedling trees, nursery seedlings :—Plantae sunt de arboribus, plantaria vero, quae ex seminibus nata sunt cum radicibus, et a terra propria transferuntur (530, vi, 12).

pomum, edible fruit of any kind :—Poma dicta ab opimo, id est a copiae ubertate. Matura dicuntur, quia apta sunt ad manducandum sic et immatura, quia priusquam fiant matura, dura sunt ad manducandum (531, vi, 24).

propaginare, to propagate by layering :—Propaginare vero est flagellum vitis terrae submersum sternere, et quasi porro pangere. Hinc propagines a propagare, id est protendere dictae (529, v, 33).

propago, a layer (vide supra).

proscissio, the first ploughing of land :—Proscissio est aratio prima, cum adhuc ager durus est (523, ii, 5).

putare, to prune :—Putare est virgam ex vite superfluam resecare, cuius flagellis luxuriat. Putare enim dicitur purgare, id est amputare (529, v, 32).

quisquiliae, vegetable refuse, droppings of trees :—Quisquiliae sunt stipulae immixtae surculis foliis ac aridis. Sunt autem purgamenta terrarum (532, vi, 28).

racemus, part of a bunch of grapes :—Racemus est botrionis pars, et botrio Graecum est (528, v. 14).

radix, root, underground stem :—Radix appellatur, quod quasi radiis quibusdam fixa terris, in profundo dimergitur. Nam physici dicunt parem esse altitudinem radicum et arborum. Alii radicem a similitudine radiorum dictam putant, vel quia, si eradatur, non repullulat (530, vi, 14).

ramus, bough or main branch of a tree :—Rami sunt, qui de trunco manunt, sicut a ramusculis caetera (531, vi, 17).

ramusculus, subordinate branch (vide supra).

recidiva, trees regenerating after cutting down, second growth wood :—Recidiva arborum sunt, quae aliis sectis repullulant. Alii recidiva a cadendo dicunt, quia post casum nascuntur. Alii a recidendo et repullulando dixerunt. Ergo recidivum, ubi mors est casus (530, vi, 10).

runcatio, weeding :—Runcatio est a terra herbas evellere (523, ii, 4).

sagitta, the slender youngest part of a lateral vine shoot :—Sagittam rustici vocant novissimam partem surculi, sive quia longius recessit a matre, et quasi prosiliit, seu quia acuminis tenuitate speciem praefert teli (527, v, 7).

saltus, a dense wood of tall trees :—Saltus est densitas arborum alta, vocata hoc nomine, eo quod exiliat in altum, et in sublime consurgat (530, vi, 8).

sarmentum, slender branch :—Sarmentum a serendo (527, v, 5).

satio, sowing :—Satio dicta, quasi seminis actio, vel quasi satorum actio (524, ii, 6).

seges, a cornfield :—Seges autem de semine dicta, quod iacimus, sive a sectione (524, ii, 7).

sentix, brier :—Sentix dicta a situ, quod est terra unculta, in qua sentices spinaeque nascuntur. Maiores autem nostri omnem arborem spinosam dicebant veprem, quod vi prendat (540, vii, 60).

silva, a dense wood of small extent :—Silva vero spissum nemus et breve. Silva dicta quasi xilva, quod ibi ligna caedantur. Nam Graeci ξύλον lignum dicunt. Multa enim nomina Graecam plerumque etymologiam recipiunt (530, vi, 5).

spado, sterile shoot :—Spadones sunt surculi fruge carentes, ex ipsa appellatione, quod sint inhabiles fructu et sterilitate affecti (527, v, 6).

spica, young bristly ear of corn :—Spicam de maturis frugibus abusive dicimus. Nam proprie spica est, cum per culmi folliculum, id est extremum tumorem aristae adhuc tenues in modum spiculi eminent (525, iii, 15).

stipa, straw :—Stipa vocata, propter quod ex ea stipentur tecta. Hinc et stipula per diminutionem (539, vii, 56).

stipula, (1) vagina of a grass leaf :—Stipulae sunt folia seu vaginae, quibus culmus ambitur atque fulcitur, ne pondere frugis curvitur, qua ambiunt culmum. Et dicta stipula quasi usta, et quasi ustipula. Stipula dicta ab usto, collecta enim messe uritur propter culturam agri. Item stipula, vel quia pars eius uritur, pars

interdum pro palea praeciditur (525, iii, 18); (2) *stipulae* (pl.), stubble :—Incensio stipularum (523, ii, 1).

sulcus, furrow :—Sulcus a sole vocatur, quod proscissus solem capiat (523, ii, 5).

surculus, branchlet, twig :—Surculi sunt a praecisione serrae nuncupati (531, vi, 17).

thyrsus, erect main stem (vide *caulis*).

torris, brand, firebrand :—Torris lignum adustum, quem vulgus titionem appellat extractum foco, semiustum et extinctum (531, vi, 27).

traducere, transducere, to transplant (529, v, 33).

truncus, trunk of a tree :—Truncus est statura arboris insistens radici (530, vi, 15).

turbiscus, a group of many shoots from a single clump or stump :—Turbiscus, quod de uno cespite eius multa virgulta surgunt, quasi turba (539, vii, 56).

uva, a relatively small, fleshy, juicy fruit :—Uvae dictae quod intrinsecus humore sunt plenae, succoque et pinguedine. Nam humidum, quod exterius humorem habet, uvidum quod interius (527, v, 13).

uvidum, juicy (vide supra).

vepres, a spiny tree (vide *sentix*).

vervactum, fallow ground :—Vervactum dictum quasi vere actum, id est verno aratum (532, ii, 5).

virga, slender branch, twig (vide infra).

virgultum, stool shoot, shoot from the base or root of a tree :—Virgultum est, quod de radice pullulat, ramus, qui de ipso robore arboris, virga, quae de ramis. Proprie autem virgultum appellatur, quod ad radicem arboris nascitur, et quasi inutile ab agricolis amputatur. Et hinc dictum virgultum, quia ex virga tollitur (531, vi, 18).

vitis, grape vine :—Vitis dicta, quod vim habeat citius radicandi. Alii putant vites dictas, quia se invicem vittis innectant, vicinisque arboribus reptando religentur. Est enim earum natura flexibilis, quae quasi brachiis quibusdam quicquid comprehenderint, stringunt (526, v, 2).—Apparently not used by Isidorus in the general sense of climbing plant.

L—TWO PLANTS NEW TO THE FLORA OF CYPRUS.

A. K. Jackson.

Catapodium loliaceum (*Huds.*) *Link*, Hort. Berol. **1,** 45 (1827). *Poa loliacea* Huds. Fl. Angl. **1,** 35 (1762).

Specimens of this species have been received in a collection of plants made by Mr. A. Syngrassides in the Kyrenia district of Cyprus. The following are the details on the label : Kyrenia, about 200 yards away from the sea-shore, growing in a rich loam covering the rocks in a thin layer, 27.4.32, *Syngrassides* 3.

Though not recorded in Holmboe, Studies on the Vegetation of Cyprus (1914), there are specimens of this species at Kew collected on Cap St. André, 25.4.1880, *Sintenis et Rigo* 390. The species has a wide distribution through the countries bordering the Mediterranean and the Atlantic coast of Europe.

Minuartia geniculata (*Poir.*) *Thell.* Fl. adv. Montp. 232 (1912); *Arenaria geniculata* Poir. Fl. Barb. **2,** 106 (1789); *Rhodalsine geniculata* Williams in Bull. Herb. Boiss. **6,** 7 (1898).

Specimens collected at Kyrenia, about 10 yards from the seashore on dry sand, 27.4.1932, *Syngrassides* 12, have been identified as this species. They agree with Poiret's original description, except that the petals are (in the dried state) pink. In this respect they agree with Vahl's description of his *Arenaria procumbens* (Symb. Bot. **2,** 50 : 1791). After an examination of the whole of the material of *Minuartia* sect. *Psammophilae* Fenzl (see Mattfeld in Fedde Repert. Beih. **15,** 215 : 1922) it has been concluded that *M. procumbens* (Vahl) Graebn. and *M. geniculata* (Poir.) Thell. are not specifically distinct. This species (in the broad sense) occurs in Spain, Sicily, Sardinia, Italy (local), Malta, Greece (local), Egypt, Morocco, Algeria, and Tunis.

LI—MISCELLANEOUS NOTES.

Retirement of Mr. Winn.—Mr. Williams Nicholls Winn, M.B.E., retired from the post of Botanist (previously Assistant) in the Curator's Office on June 15th, 1933, having reached the age-limit after over 43 years' service at Kew.

After receiving early horticultural training in Cornwall, Mr. Winn entered Kew as a Student Gardener on March 24th, 1890, and was promoted to be Sub-foreman on July 7th, 1891. The following year, on October 1st, he was appointed Assistant in the Curator's Office, a post which he held until his retirement this year.

Through his unflagging zeal for hard work, great attention to detail, and intimate knowledge of the work of the office, Mr. Winn has been an invaluable right-hand man to a succession of five Curators. Writing on October 24th, 1906, Mr. W. Watson, Curator from 1901–1922, said "I would like to record my sense of the thorough painstaking performance of the duties of Assistant in the Curator's Office by Mr. W. N. Winn. He is a most excellent officer and as a proof of his promptness and willingness I may mention his having worked over fifty hours overtime since October 1 in the preparation of the estimates, etc." a verdict which has been heartily endorsed by Mr. Watson's successors. In the Birthday Honours List for 1933, Mr. Winn received the M.B.E. in recognition of his long and meritorious services at Kew.

Mr. Winn has always taken a keen interest in the sport of the Gardens. He was captain of the cricket team in his Student Gardener days, and for many years has been the Secretary and

moving spirit of the tennis club, a post which it is hoped he will continue to fill during many years of active and happy retirement.

Mr. Reginald Francis Williams has been appointed Higher Grade Clerk in the Curator's Office in succession to Mr. Winn.

William Grant Craib.—Systematic Botany has sustained a serious loss in the death of William Grant Craib, F.L.S., F.R.S.E., Regius Professor of Botany in the University of Aberdeen, at the early age of 51. Accompanied by his wife, Professor Craib was spending part of his long vacation at Kew, when he became unwell and died there, after a brief illness, on September 1st.

Craib was a son of the late Mr. William Craib, a farmer of Kirkside, Banff, and was born on March 10th, 1882. He received his early education at the Banff and Fordyce Academies. Later he entered Aberdeen University where, in 1907, he graduated in arts, with special distinction in botany. During his undergraduate days he made a considerable collection of wild plants around Banff, for which he received the Dickie Prize of the University. This, no doubt, turned his thoughts to the serious study of flowering plants.

While working in 1908 for his B.Sc. degree, he was recommended by the late Professor Trail to apply for a temporary post as Acting Curator of the Herbarium at the Royal Botanic Gardens, Calcutta, which Major (now Colonel) Gage was then seeking to fill. Craib applied and was appointed. When acting at Calcutta under Mr. (now Sir William) Wright-Smith, during Major Gage's absence on leave, he made large collections in the North Cachar Hills, which he subsequently named. In the spring of 1909 the post of Assistant for India at Kew fell vacant, and it was offered to Craib by the Secretary of State, on the recommendation of Sir David Prain. During his tenure of this post he made valuable contributions to the botany of India and S. W. China. He was at that time particularly interested in the family *Leguminosae* and in the genus *Primula*, on both of which he published papers, and later he worked on the *Gesneraceae*. It was while at Kew that he commenced his studies on the flora of Siam, which became his chief work in life, and to which he gave up most of his leisure. In 1909 collections began to come to Kew from Siam, and these were handed to Craib to deal with. The following year Dr. C. C. Hosseus, who had visited Siam in 1904–1905 to collect plants, came to Kew to work out some of his critical species. Craib saw his collections, and this still further increased his interest in a region with a rich flora, at that time but imperfectly known. The stimulus of Craib's letters to the collectors in the field was largely responsible for the continuance of the collecting.

In 1909 Craib began to publish the results of his Siamese work. In the "Kew Bulletin" of that, and the following year, there appeared the descriptions of several new species from Siam, some of which were done in conjunction with Mr. J. Hutchinson. In 1911 he began the publication of his "Contributions to the Flora of Siam" in the

Bulletin with the sub-heading "List of Siamese Plants with Descriptions of new Species." This list was finished in 1912 when the Monocotyledons, excluding *Orchidaceae*, were published. The primary idea of the List was to give additions to Dr. F. N. Williams's "Liste des Plantes connues du Siam," published in the "Bulletin of the Herbarium Boissier" (1904–5). Craib's list did not extend to the Siamese part of the Malay Peninsula, and chiefly accounted for the new records of Dr. C. C. Hosseus, and the collections made in Northern Siam by Dr. A. F. G. Kerr. In the "Kew Bulletin" for 1912, Craib published the first of a long series of "Additamenta" to his "Contributions to the Flora of Siam." These contained descriptions of new species, the last one being published early this year. From 1912 onwards seldom a year passed without the appearance of at least one "Additamentum." In all, thirty-three appeared. Four of these were by other authors, chiefly students trained by Craib himself, the remainder being mainly his own work. In these twenty-nine "Additamenta" upwards of 700 new species were described. Here also appeared the descriptions of the new genera *Pittosporopsis* (*Icacinaceae*), *Muronia*, and *Afgekia* (*Leguminosae*).

In the year 1915 Craib accepted the post of Lecturer in Forest Botany and Indian Trees at Edinburgh University, offered to him by Professor Sir Isaac Bayley Balfour. It was at this time that he began spending his vacations at Kew in pursuance of his Siamese studies. Soon, however, he became immersed in work for the Air Board, which he took up with characteristic energy, working 12–14 hours daily, Saturdays and Sundays included. In 1918 Craib commenced his investigations on the distribution of sap in trees. This proved very exacting work, sometimes entailing his remaining in the laboratory all night. Most of the previous work on sap had been done on leaf-bearing twigs. Craib tackled the trunks of full-grown trees, and obtained some very interesting results which were published in a series of three papers, under the title "Regional Spread of Moisture in the Wood of Trees" in "Notes from the Royal Botanic Gardens, Edinburgh" (1918–1923).

While in Edinburgh, in 1917, Craib married Mary Beatrice, younger daughter of the late Mr. James Turner of Acton. This proved a very happy marriage. Mrs. Craib entered whole-heartedly into his work and was able to assist him in many ways.

In 1920 Craib was appointed to the Regius Professorship of Botany in Aberdeen University. At about the same time he was also offered a post as Botanist to the Royal Siamese Forest Department. Fortunately, at least from the point of view of his work on the Siamese flora, he decided against going out to Siam.

At Aberdeen Craib devoted himself largely to Systematic Botany, and fostered special research in the subject among his students, several of whom have made important contributions to the flora of Siam.

In 1921 Craib had the misfortune to lose a leg through a railway accident during the meeting of the British Association at Edinburgh,

which proved a great handicap, and entailed a more sedentary life than was good for his health. However, he continued with unabated vigour his studies on Siamese plants, coming to Kew nearly every long vacation to work on the more critical species.

Craib took a very lively interest in the Cruikshank Botanic Gardens, the collections were largely increased and with the help of Mr. William Grant, he was successful in growing plants from Siam. When the Royal Horticultural Society of Aberdeen celebrated its centenary in August 1924, the Cruikshank Botanic Gardens exhibit of Siamese plants was awarded a Lindley Medal.

In 1925 Craib commenced the publication of what must be considered his principal work, his " Flora Siamensis Enumeratio." This was issued under the auspices of the Siam Society, who published the work in Bangkok. In Craib's own words the Enumeratio " was to bring together into one list the scattered records of previous papers, supplemented by more recent work. Such a list, it was felt, would be of some service to residents in Siam who are interested in the subject, both as a record of the present state of our knowledge of the Flora, and as affording a readier means of recording additions. It has been compiled from that point of view, and also to some extent to form a more suitable basis for the work of flora-writers in the future." These words, however, give no idea of the vast amount of original work contributed to it by Craib himself. At the time of his death the first volume of this enumeration, containing all the *Polypetalae*, had been issued, as well as the first part of Volume 2. The manuscript of the second part of Volume 2, finishing the *Rubiaceae*, had also been sent to the press, and the proofs of the greater part of it corrected.

Craib's name is commemorated in the genera *Craibiodendron* and *Craibia*, and in a number of specific names.

Siam is indeed much indebted to Craib, and will realise this more and more in the years to come. He spared neither energy, health, nor money in his devotedness to his favourite study.

As a Professor, Craib was a stimulating teacher, and had the faculty of inspiring his students with some of his enthusiasm. Fortunately he has left several who are anxious to carry on his work. Craib was a worthy successor to Trail, and it is to be hoped that Aberdeen will keep up the high tradition of Systematic Botany set by these two fine teachers.

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A. F. G. K.

Henry George Greenish.—The death of Professor Greenish on August 2nd at the age of 78 came with tragic suddenness shortly after his retirement from the Pharmacy School, where he had served the Pharmaceutical Society of Great Britain for nearly half a century. His distinguished career with the Society included appointments first (in 1890) as a Lecturer in Materia Medica, then successively as Professor of Pharmaceutics, Director of the Pharmacy Research Laboratory and Dean of the School. Prof. Greenish was in touch with Kew for practically the whole of this period. As Secretary of the Committee of the Pharmaceutical Society for the 1898 edition of the British Pharmacopoeia he was associated with the late Sir William Thiselton-Dyer, who acted as referee in Botany, and with Sir David Prain as joint-editor (with the late Prof. Sir Nestor Tirard) of the Pharmacopoeia in 1914 ; recently as a member of the Commission for the production of the 1932 edition he was in communication with the present Director on matters relating to Botany.

His published works are numerous, the more important being " A Text Book of Materia Medica " for students of pharmacy and medicine—the sixth edition (1933) being issued shortly before his

death ; " The Microscopical examination of Food and Drugs "—third edition 1923 ; " An Anatomical Atlas of Vegetable Powders " (1904), in collaboration with Eugene Collin ; and many important memoirs and papers in " The Pharmaceutical Journal " and " The Chemist and Druggist " on drugs, giving results of original research, one of the most recent being on " New Sources of Santonin " (*Artemisia Cina* Berg).

As author, teacher and research worker, Prof. Greenish achieved an international reputation. He received the Hanbury Gold Medal in 1917, was selected by the Board of Professors of the School of Pharmacy of Paris with four other men of science for the conferment of the honorary degree of Doctor of Science of the University of Paris (1917), and served as President of the Pharmaceutical Conference of Great Britain for 1921–1922.

Eric Drabble.—We learn with regret of the death of Dr. Eric Drabble, F.L.S., A.R.C.Sc., which took place at Freshwater, Isle of Wight, on August 3rd.

Dr. Drabble was born in 1877 and was educated at Chesterfield Grammar School. He secured the London B.Sc. degree while a student at the Royal College of Science and his D.Sc. in 1903. In 1908 he succeeded the late Dr. Percy Groom as head of the Botanical Department of the Northern Polytechnic, London. During the late war he took charge of the botanical department at Birkbeck College and combined the botanical work of the two establishments. In 1924 he was obliged through ill-health to retire from active teaching and he moved to the Isle of Wight.

Dr. Drabble was always keenly interested in British plants and particularly in the British pansies on which he was the accepted authority. He published many papers on British plants and was the author of an elementary text-book of botany.

Those who were closely associated with him will remember him as a brilliant lecturer and a sympathetic teacher. F. B.

Coroa Coffee.—An enquiry was recently received at Kew for seeds of a remarkable new coffee called " Coroa" (or Crown), reported to have been raised in the State of Espirito Santo, Brazil, and to produce berries containing twelve seeds. Enquiry at the source of production, through the kind offices of Mr. J. G. Lomax, H.M. Commercial Secretary at Rio de Janeiro, elicited the fact that the new tree was not well known to planters there. Specimens obtained by Mr. Lomax from Espirito Santo and forwarded to Kew, proved to be a fasciated form of Arabian Coffee (*Coffea arabica*) which, however, is not likely to be of any economic or commercial value. The fasciation occurs in the shoots, flowers and fruits, and produces multiplication of the reproductive parts. The usual five stamens are increased to eleven and numerous ovules are produced, giving rise to a corresponding increase of seeds, which in the normal form

number two in a berry. It is suggested that the malformation is due to especially luxuriant growth. Mr. W. C. Worsdell informs me that he has not met with a similar case in coffee during his work on plant teratology. Dr. O. Penzig in Pflanzen-Teratologie, **2**, 448 (1921) states that in *Coffea arabica* and *C. liberica* synanthy and syncarpy are common at Buitenzorg, and that in the latter species polymerous flowers are very frequent. J. H. H.

Abies pindrow *Royle*.—The correct name of the West Himalayan Fir is *Abies pindrow* Royle, not *A. Pindrow* Spach, as cited in almost all works of reference. In the first place, the specific epithet " pindrow " should be spelt with a small initial letter, since it is neither a personal nor a generic name, but is merely a vernacular name of the tree (International Rules, ed. 2, Rec. X). Secondly, there is no good reason for citing Spach as the author of *Abies pindrow*. Spach himself (Hist. Nat. Veg., Phan. **11**, 423) correctly cited *Abies pindrow* from Royle, Ill. t. 86. The origin of the mistaken attribution of the name to Spach is the fact that the text corresponding to Royle's plate included (1) the remarks of Royle (pp. 350, 351), who placed the species under *Abies*, and (2) the diagnosis supplied by D. Don (p. 354), who placed it alternatively under *Pinus* L. (sensu lato) or *Picea* D. Don. It may be mentioned that Don used the generic name *Picea* for what is now called *Abies*, and *Abies* for what is now known as *Picea*, as in Loudon's Arboretum et Fruticetum Britannicum, **4**, 2293, 2329 (1838), where we find *Abies* D. Don, the Spruce Fir, and *Picea* D. Don, the Silver Fir. Royle very properly included Don's diagnosis of the species under the names adopted by Don, but he himself preferred to employ the name *Abies* for the genus which included the Silver Fir, following Link (1827), Ledebour (1833), and Nees von Esenbeck (1835).

In a paper (see p. 378) on the dates of publication of Royle's " Illustrations " it is shown that many of the plates appeared in earlier parts of the work than the corresponding text. According to Loudon's Gardener's Magazine, **12**, 319 (June 1836) the plate of *Abies pindrow* appeared in Part IX [May 1836]. Pp. 350–354, on the other hand, appeared in Part X [Febr. 1839]. The dates of publication of the respective parts, and the pages of text contained in them, are given on p. lxxx (unnumbered) of the Introduction to Royle's " Illustrations." The figure of *Abies pindrow* Royle (t. 86) is accompanied by analyses, and the name was therefore validly published in 1836 (Internat. Rules, ed. 2, Art 37). *Pinus pindrow* (1837) and *Picea pindrow* (1838) were new combinations published respectively in Lambert's " Pinetum " and Loudon's " Arboretum." Both should be attributed to D. Don. The principal synonymy of *Abies pindrow* follows.

Abies pindrow *Royle*, Ill. t. 86, fig. a-c (May 1836) ; et pp. 350, 351 (Febr. 1839).

Pinus pindrow D. Don in Lambert, Pinetum, ed. 1837–42, **3**, 47–48, t. 99 (1837).

Picea pindrow [D. Don ex] Loud. Arb. et Frut. Brit. **4,** 2346 (1838) ; et in Royle, Ill. 354 (Febr. 1839).
Abies Webbiana var. *pindrow* Brandis, For. Fl. Brit. Ind. 528 (1874).

T. A. S.

The Flora of Surinam.*—More than twenty-five years have passed since Dr. Pulle published his " Enumeration of the vascular plants known from Surinam," with localities for the species, distribution, vernacular names and occasional synonyms, adding a useful history of the investigation of the flora of the Colony and some valuable phytogeographical remarks. Since then great quantities of material from the Colony, particularly of the larger forest trees, have accumulated in the Utrecht Herbarium, and Dr. Pulle is now editing a Flora of Surinam (in English) on a complete scale, which promises to be the most important and useful work published on South American botany since Martius' Flora Brasiliensis. We venture, indeed, to express the opinion that the ideal of a colonial flora will here be achieved, since the work is unashamedly planned and calculated to please taxonomists and specialists throughout the herbaria of the world, as well as to serve the requirements of forest officers and agricultural workers in the field. Thus the treatment of each family comprises careful generic and specific keys, long generic and specific descriptions, generous synonymy, distribution of the species and their localities in Surinam (with citation of specimens), and vernacular names. The work is excellently printed and the whole format is attractive and scholarly.

Following these lines and in the pursuit of this aim, the editor has most wisely seen that the first essential is not to hurry, and that the second is to enlist the services of as many collaborators as possible, including numerous well-known specialists. The Flora, which will only contain the Phanerogams, is to be published in four volumes, the whole work containing about 1500 pages, and families in each volume are to appear as soon as they are ready for the press. Those families which have appeared up to date include the *Malvaceae* by Dr. H. Uittien, the *Convolvulaceae* by Dr. S. J. van Ooststroom, and an invaluable account of the *Euphorbiaceae* by Dr. J. Lanjouw. Another important contribution is the treatment of the difficult family *Apocynaceae* by Dr. Fr. Markgraf of Berlin. All these contributions give evidence of the same care and critical approach to the work which will make every student welcome the appearance of this Flora, and which will naturally give peculiar satisfaction to workers on the adjacent flora of British Guiana. In this connexion

* The Flora of Surinam (Dutch Guyana), edited by Dr. A. Pulle, Prof. of Systematic Botany at the University of Utrecht, Netherlands. Vol. I, Gnetaceae to Ulmaceae (pp. 1–48); vol. II, Euphorbiaceae to Rhamnaceae and Monimiaceae (pp. 1–112); vol. III, Malvaceae to Elaeocarpaceae (pp. 1–64); vol. IV, Apocynaceae to Pedaliaceae (pp. 1–112). Edited by the Koloniaal Instituut te Amsterdam, printed by J. H. de Bussy, Ltd., Amsterdam, 1932.

we may note, with Dr. P. J. Eyma, that " the present state of our knowledge of the flora of Surinam, at least of the families treated here, does not permit the drawing of any plant-geographical conclusion based on a comparison of Surinam with French and British Guiana." Coincidence plays too large a part in the collection of species, particularly of climbers, in tropical forests. For instance, 9 species of *Strychnos* are known in British Guiana, but only 1 is recorded from Surinam ; and 2 species of *Forsteronia* have so far been collected in Surinam, whereas no less than 4 were felled by the Oxford University Expedition to British Guiana within a radius of two miles from camp. Far more perplexing is the question of the distribution of forest trees, which are in certain cases, e.g., Greenheart, far more local than is generally believed. It is rather curious that certain small trees of the bottom storey, which are abundant in the coastal region of British Guiana, are at present unknown in Surinam, and even more remarkable is the fact that *Catostemma fragrans*, a large tree which is rendered conspicuous by the external rings on the bark, and is well known in both British Guiana and in Cayenne (under the name *Guenetia macrosperma* Sagot ex Benoist), has never yet been noticed in the Dutch forest reserves. For *Strychnos Rouhamon* Benth. we should prefer the combination *S. guianensis* (Aubl.) Baill., based on *Rouhamon guianensis* Aubl. ; and some mention should have been made of *Sloanea amplifrons* I. M. Johnston, a name applied by its author to the Guiana tree which has for so long been known as *S. dentata* L., Linnaeus' name being restricted by him to a West Indian plant (see Contr. Gray Herb. **75,** 29–30, 1925). It is to be hoped that uniformity will be secured in the spelling of the South American Republic as Colombia, in preference to Columbia. N. Y. S.

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